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The Ohio State University, 1989

DISSERTATION

Presented in Partial Fulfillment of the Requirements for the Degree Doctor of Philosophy in the Graduate School of the Ohio State University

By

Olumide Adebola Ijose, B.S., MLHR

The Ohio State University

1989

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To my Parents: Dr. Abiodun Ijose and Mrs. Oluwafunmike Ijose
ACKNOWLEDGEMENTS

I express sincere appreciation to the members of my committee (Dr. Stephen Hills, Dr. Stephen Mangum and Dr. Michael Wallace) on their guidance and expert insight throughout the research and writing of this dissertation. I am especially grateful to Dr. Stephen Hills who exceeded my extremely high expectations in every way throughout the research. To my parents and siblings, I am deeply grateful for your prayers and support. I could not have gotten this far without you. Finally and most importantly, I give thanks to God from whom all good things come.
VITA

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Major Field: Labor and Human Resources

Minor Field: Human Resource Management/Planning
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CHAPTER I
INTRODUCTION

In the United States union membership growth has historically never been stable. However, it is widely recognised by industrial relations scholars that the percentage of the workforce unionized has been declining steadily over the past 30 years. (Farber, 1988; Freeman, 1988).

Three arguments can be found in the literature for explaining the percentage of the labor force that is unionized. (1) There are those researchers who argue that the percentage of the labor force that is unionized is mainly determined by general economic conditions, workplace conditions, and individual attitudes (that is by the demand for unions); (2) those who contend that union coverage is mainly determined by political, legal, and ideological factors (that is the enabling factors that affect the supply of union jobs); and (3) those researchers who argue that the percentage of the labor force that is unionized, is a
function of both the demand and supply side.

In a landmark study on union membership, Freeman and Medoff (1979) "found that the extent of private sector unionism has been declining in scope since the mid 1950s" (p. 174). Ann Lawrence noted that between 1979 and 1982, American union membership declined from 22.6 to 19.8 million, a drop of over 12 percent; during the same period, the rate of unionization dropped from 21.5 percent to 17.9 percent of the civilian labor force" (Lawrence 1985 in Staudohar and Brown 1987 p. 201).

William Dickens and Jonathan Leonard, for example, write that "between 1950 and 1954, the proportion of private sector nonfarm and nonconstruction wage and salary workers who were union members increased from 35.4% to 39.2%. From 1955 to 1980, however the union share of the labor force fell reaching a low of 23.6% in 1980. The total number of union members increased during most of the period following 1950, but in recent years even that number has been falling" (Dickens and Leonard, 1985).

It is also widely acknowledged that the sectors of the economy where unions have been losing membership the most are the manufacturing and construction industries. Edward Kokkelenberg and Donna Sockell (1985), in a study of union membership, found that "unionization in a number of traditionally heavily unionized industries declined over the 1973-1981 period, for example coal mining and automobiles"
1.1 Research Problem

Although the percentage of the non-agricultural labor force that is unionized is one of the traditional issues studied by industrial and labor relations scholars, there has been relatively little empirical research directed at analyzing union membership in a reduced form equation and by aggregating data up from the state level. In my opinion, much emphasis has been placed on either the demand side or the supply side of the unionization issue. A reduced form equation contains theoretical variables that determine union coverage from both demand and supply sides.

Inter-state variations in such factors as the demographic composition, industrial composition and mix, labor laws, and the intensity of employer resistance to unionization, suggests that state differentials may have effects on the extent and rate of union growth and on the percentage of the non-agricultural labor force that is unionized. This research will use existing data to determine what effect interstate differences has on the percentage of the labor force that is unionized, and also to assess the relative impact of the different indicators of interstate differences that will be tested.
1.2 Purpose of the study

The objective of the study is to assess the relationship between state differentials and the percentage of the non-agricultural labor force that is unionized by studying the demand for and supply of union jobs. The impact of state differentials on the percentage of the labor force that is unionized will be assessed by studying the impact of factors that affect the demand and supply of union jobs.

1.3 Theoretical Model

Theoretically union membership is a function of worker demand for unions and the supply of union jobs. Demand for unionization is a function of individual worker preferences and the characteristics of individual jobs while the supply of union jobs is a function of enabling factors, specifically legislation and employer resistance.

1.3.1 The Demand for Unionization

Theoretically, it can be argued that individual attitudes towards unions is the primary determinant of labors demand for union representation. Individual attitudes in turn can be measured/proxied by several factors.

Prior research indicates that individual preferences as captured by demographic characteristics are independent indicators of the demand for union jobs. For example, the higher the percentage of blacks in the labor force, the
higher the demand for union jobs is expected to be (Kochan 1979; Hills and Leigh, 1986). Some prior research has also found a similar relationship for women, although the impact of women on the demand for union jobs is not as clear as the impact of blacks on the demand for union jobs.

A second factor that taps into the effect of individual preferences on union joining behavior is educational level of different individuals. The percentage of high school graduates in a state, is expected to have a negative effect on the demand for union jobs, that is, worker demand for union jobs is expected to correlate negatively with the percentage of high school graduates in each state. Thirdly, urbanization is expected to have a positive effect on union growth, as urban dwellers are expected to have a more positive attitude towards unionization as a result of the unique influence of urban living on perception.

Fourthly, union membership has been shown to be somewhat correlated by industry. For example, union membership has traditionally been high in manufacturing sector industries such as auto, steel, and rubber, while union coverage has traditionally been low in service sector industries, such as finance, insurance and real estate, retail and banking. Past research indicates that a major reason for this phenomenon is the characteristics of the jobs found in these different environments. As such, the structure of employment (as measured by the percentage of the non-agricultural labor
force employed in different sectors of the economy) is expected to have a determining effect on union coverage. Therefore the higher the percentage of manufacturing jobs a state has, the higher the demand for union jobs is expected to be.

The state of the economy as characterized by unemployment levels is theorized to have an independent effect on union membership. The unemployment rate controls for the varying effect of the business cycle on the economic activities within a state, thus controlling for the potential effects of these factors on the percentage of the labor force that is unionized. In discussing the independent effect of unemployment on union coverage, it is imperative to keep in mind the year that this dissertation covers (1970-1980).

The 1970s have been characterized as the golden years of unionization in the United States. Ironically union clout began to diminish in the tail end of this decade. The 1970s was also a decade where unions were viewed as powerful institutions (Kochan, 1981). Therefore workers would be expected to remain unionized or seek to join unions as employers began laying workers off in response to the stagflation experienced in this decade and the increased competition in both the international and domestic markets that U.S. corporations experienced. As such, higher unemployment is expected to have a positive effect on union
1.3.2 The Supply of Union Jobs

The supply of union jobs is theorized to be determined by employer resistance to unionization efforts, legislation, the public's outlook towards unions and the extent and success of union organizing activity. The impact of managerial resistance on unionization is primarily in the private sector. In the public sector, the government by virtue of public sector collective bargaining legislation does not have the same incentives to fight against unionization. The effect of managerial resistance will be determined by evaluating the number of unfair labor practice cases submitted to the National Labor Relations Board (NLRB) as a ratio of certification elections conducted the NLRB and by evaluating the number of unfair labor practice cases submitted to the NLRB as a ratio of total employment. The supply of union jobs is expected to be lower the higher the ratio.

Union organizing activity, without any doubt, has an independent effect on the percentage of the non-agricultural labor force that is unionized. Irregardless of the demand for union jobs, union membership will not increase significantly short of concerted efforts by trade unions to organize new members. An increased commitment by labor unions to organizing new workers is expected to have a
positive impact on the number of workers who are union members ceteris paribus.

Enabling legislation can be evaluated by sector. In the public sector enabling legislation is captured by all those pieces of law that give public sector workers the right to form unions for the purpose of collective bargaining. It is expected that time has a diminishing effect on the supply of union jobs, as it relates to the effect of public sector legislation on union membership. Specifically, the number of months a state's public sector collective bargaining law has been in effect is expected to have a continuous but diminishing effect on union membership.

In the private sector, the effect of the National Labor Relations Act is theorized to be constant at any point in time. The only exception to this is where the effect is analyzed for several different time periods. Here the effect would be determined by the ideological composition of board members and by the nature of enforcement patterns during each time period. However right-to-work-laws have not been legislated in every state and as such there is variation in the impact of this factor by cross-section and by time. The effect of right to work laws on unionization has been the focus of considerable empirical analysis, although the results are somewhat conflicting. It is expected that the presence of right-to-work laws in a state has a negative effect on the supply of union jobs.
On the whole, it is very likely that the effect of a theoretical variable on union coverage at the national level may be obscured by variations at the regional level. For example the impact of southern states (especially those in the deep south) on the percentage of the labor force that is unionized has long been of great theoretical interest. Industrial relations scholars frequently debate and speculate on whether or not southern states have a unique effect on the supply of union jobs.

Questions that have been asked center on whether the seeming downward effect of southern states on union membership could be a function of the existence of right to work laws, or employer resistance, or job characteristics, or a combination effect of these and other variables? To decipher the possible effect of regional variations, a regional analysis is conducted to help explain observations at the national level.

The theoretical model that flows from the arguments presented is:

\[ \text{DD for unionization} = \text{fcn (individual attitudes towards unions)}. \]

At the state level = \text{fcn (demographic characteristics + educational level of population + extent of urbanization + job characteristics)}. \]
SS of union jobs = fcn (employer resistance +
government legislation + public
outlook towards unions).

At the state level = fcn (employer resistance +
government legislation + public
outlook towards unions + union
organizing activity).

The percentage of the non-agricultural labor force
unionized (PCTUNION) will be analyzed by using a reduced
form equation that contains both the supply and demand side
factors. Thus:

PCTUNION = fcn (sectoral employment levels + demographic
characteristics + educational level of
population + urbanization + job
characteristics + real wages legislation +
employer resistance + union organizing
activity + unemployment rate);

whereby (on the demand side) individual attitudes are
measured by demographic characteristics, educational
attainment, and urbanization, and job characteristics are
measured by sectoral employment. Managerial resistance, the
public's perception of unions, and union organizing activity
affect union coverage on the supply side. Finally the
unemployment rate is used to control for the disparate
effect of the macro economy on union growth.
1.4 Significance of the Study

This study is an attempt to study the demand and supply side factors that determine union growth in more detail than previous work. Analyzing the percentage of the labor force that is unionized at the national and regional levels by aggregating state level data, helps to isolate how state variations in enabling factors (supply side), socio-economic conditions, job factors, and legislative variables affect the percentage of the labor force that is unionized. States show variations in public sector regulations. In the private sector, states exhibit variations in the employment composition of their labor force and on the types of jobs available. Significant variation also exists in the educational attainment of different states, in the number of blacks in the labor force of each state, in the presence or absence of right to work laws, in the extent of employer resistance to organizing efforts, and in the intensity of unionization drives.

Pooling data from the state level to perform a national and regional analysis of union coverage, and combining data from both the public and private sectors in a reduced form equation, is a major departure from past research efforts into this question. The results of this study will help fill some of the void left by the lack of empirical research on union membership using reduced form equations and by aggregating data from the state level.
The study will cover the years from 1970-1980, thus providing a comprehensive base for evaluating the spatial and temporal effects of state differences on union growth. A pooled cross-sectional and time series study allows analysis of union membership trends from the unique perspective of state differentials. This enables the isolation of important trends which can be important to unions and their members, members of the management community, and policy makers. The availability of consistent data and the sheer amount of computing power available makes it possible to perform this type of analysis.

In order to predict the future (no matter how unreliably) it is important to study and understand past and current events, so as to isolate trends, which may or may not continue. Studying the unique decade of the 1970s, will undoubtedly give some insight on the prospect of union coverage in the 1990s and beyond.

Jerome Rostow's statement (below), about the positive influence labor unions have had on the political and economic environments of the United States summarizes the significance of this study:

"American labor unions have been a bulwark in our democratic society and a positive influence on the free competitive system. They remain dedicated to capitalism, believe in profits, and respect well managed organizations as a positive force for job security and a strong economy. They work to survive and grow with the economy, and they display a resilience and drive to do so" (1979)
Ideally, policy prescriptions should flow from the results of exhaustive and rigorous quantitative analysis. If the data indicates that state differentials do not have significant effects on the percentage of the labor force that is unionized, then the explanatory power of the effect of these differentials on the percentage of the labor force that is unionized would be weakened, with a concomitant effect on policy. If however the analysis indicates that these differences do impact the percentage of the labor force that is unionized in significant ways, then an entirely different policy posture would prevail.

The effect of state differences on the percentage of the labor force that is unionized will be further analyzed by examining the following research questions:

1 - Which of the independent variables explains the largest proportion of variation in the dependent variable.
2 - Which of the independent variables has the largest impact.

1.5 ORGANIZATION OF THE DISSERTATION

The remainder of the dissertation is organized in the following way. Chapter 2 reviews relevant literature from past research into the determinants of union coverage. The chapter is devoted to presenting theoretical and empirical findings that relate to union growth and the percentage of
the non-agricultural labor force that is unionized, in both the public and the private sector of the economy of the United States of America.

In chapter 3 the method in which the empirical analysis of the data is operationalized is presented. A model of the percentage of the union force that is unionized is first presented and then estimated. An overview of the pooled cross sectional and time series estimation methodology is also presented.

Chapter 4 presents an overview of the data file, the dependent variable and the independent variables that are used for the empirical analysis. Each variable is described briefly. The discussion highlights the expected direction of the impact of each independent variable.

In chapter 5 the results of the pooled cross-sectional and time series analysis is presented and discussed. The dissertation ends with a summary of the important findings of the regression analysis, and suggestions for future research.
CHAPTER II
LITERATURE REVIEW

2.1 INTRODUCTION

This chapter is divided into two broad parts. In the first part an indepth and comprehensive review of past research into the determinants of union growth in the private sector is presented. Theoretically there have much written on all aspects of union growth. Empirical work however, has tended to focus on either the demand or the supply side of the union coverage issue. There has been little empirical work that synthesizes demand and supply variables in an attempt to study the question based on the entire non-agricultural labor force as a monolithic whole.

The second part, is a review of past research into union growth in the public sector. Empirical evidence indicates that union membership grew slowly in this sector during the seventies (Freeman, 1988, p. 63).

On the whole empirical evidence suggests that unionism declined in the private sector - as a whole - during the seventies, while union coverage increased in the public
sector during the decade. In sum, union coverage fell as private sector losses outweighed public sector gains (Freeman, 1988, p. 64).

2.2 UNIONISM IN THE PRIVATE SECTOR

"The origins of trade unions can be traced to the end of the eighteenth century with the appearance of skilled craftsmen's organizations in the large cities" (Andrew W.J. Thompson, 1981, p. 155). Analysis of historical data, shows that union membership as a percentage of the non-agricultural labor force has fluctuated widely. Historically Thompson notes that by the year 1900, "the union movement had less than a million members, representing less than 5 per cent of the labor force, by 1910 membership was two million, and by 1920, five million (p. 157).

During the 1920's union membership as a percentage of the non-agricultural labor force fell drastically. However new deal legislation helped spur a dramatic increase in union coverage in the 1930s that continued for several decades.

Many authors including Thompson hold that the end of world war two marked the end of the golden age of American trade unionism (Thompson p. 161). This analysis is supported by the fact that union membership as a percentage of the non-agricultural labor force has been falling consistently since 1945.
Walter Galenson in his book titled "The Historical Role of American Trade Unionism", notes how "trade union membership as a proportion of employment has dropped steadily since 1935" (p. 67). He argued that the decline of smokestack industries and changes that have been taking place in the labor force, and the resumption of employer militancy, are some reasons that account for the decline in more recent years (p. 67).

Ken Galaga (1983) contended that "in 1945 about one out of every three American workers belonged to a labor union, and that by 1978 the proportion had slipped to one out of five American workers" (p.1).

Kokkelenberg and Sockell (1985) in their study of union membership in the U.S. between 1973 and 1981 found that "though the percentage of all workers unionized in the U.S. remained fairly constant over this period, unionization in traditionally heavily unionized industries declined" (p. 502). However, they attributed the decline in unionization in the manufacturing sector more to declines in nondurable goods, than to declines in durable goods manufacturing (p. 502).

By 1979 the number of workers in unions had peaked. Ann Lawrence noted that between 1979 and 1982, American union membership declined from 22.6 to 19.8 million members, a drop of over 12 percent, and that during the same period, the rate of unionization dropped from 21.5 percent to 17.9

Table 1

<table>
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<th>Year</th>
<th>Thousands</th>
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<tbody>
<tr>
<td>1880</td>
<td>200.0</td>
<td>2.3</td>
</tr>
<tr>
<td>1890</td>
<td>372.0</td>
<td>2.7</td>
</tr>
<tr>
<td>1900</td>
<td>865.5</td>
<td>4.8</td>
</tr>
<tr>
<td>1910</td>
<td>2,140.5</td>
<td>8.4</td>
</tr>
<tr>
<td>1920</td>
<td>5,047.8</td>
<td>16.3</td>
</tr>
<tr>
<td>1930</td>
<td>3,392.8</td>
<td>8.8</td>
</tr>
<tr>
<td>1933</td>
<td>2,857</td>
<td>11.5</td>
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<tr>
<td>1939</td>
<td>8,980</td>
<td>28.9</td>
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<tr>
<td>1945</td>
<td>14,796</td>
<td>35.8</td>
</tr>
<tr>
<td>1956</td>
<td>17,490</td>
<td>33.4</td>
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<tr>
<td>1966</td>
<td>17,940</td>
<td>28.1</td>
</tr>
<tr>
<td>1968</td>
<td>18,916</td>
<td>27.8</td>
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<td>1970</td>
<td>19,381</td>
<td>27.4</td>
</tr>
<tr>
<td>1972</td>
<td>19,435</td>
<td>26.4</td>
</tr>
<tr>
<td>1974</td>
<td>20,199</td>
<td>25.8</td>
</tr>
<tr>
<td>1976</td>
<td>19,432</td>
<td>24.6</td>
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Reynolds (1987) analyzed union membership in the nine broad industries the American economy is traditionally divided into. In Agriculture, Forestry, and Fisheries, Reynolds found minimal levels of unionization, even though there had been many organizing efforts made over the years (p. 162).

In mining, 162,00 or 16 percent of the employees were union members as of 1984, with membership being concentrated
in Eastern coal mining and Western copper mining (p. 165). In construction membership fell from 31 percent in 1980 to 24 percent in 1984. Serious membership losses affected all construction trades and certain locations such as the Washington D.C. area where membership fell from 67 percent to 10 percent of construction workers within a decade (p. 166).

Reynolds found that 3 out of every 4 manufacturing jobs were nonunion as of 1987. He concluded that compared to the high rate of unionization in this industry in the late 1940's the drop has been quite severe. The decline hit all the unions in this industry such as the United Automobile Workers (UAW), which went from 1.5 million to 900,000 members between 1978 and 1983 and the United Steel Workers (USW), which saw membership decline from 1.3 million to just under 589,000 within the same time period (p. 167).

In the Transportation and Utilities industry (an industry Reynolds describes as the most regulated, most unionized, and highest paying sector of the economy), the degree of unionization also declined. Reynolds states that between 1980 and 1984 union membership "fell from 2.5 million to 2.1 million of from 48.6 percent to 39.6 percent of employment (p. 176).

In the service sector Reynolds reports that only government employment is heavily unionized. In the other service industries such as trade, finance, insurance, and
real estate Reynolds describes the extent of union penetration as trivial (p. 179).

The discrepancy between the decline in the percentage of the non-agricultural labor force that are union members, and the rise in the absolute number of workers in unions for such a long time period, prompted many industrial relations experts to ponder in which direction the union movement is actually going in the United States. In 1980, John Dunlop argued that:

"The share of the non-agricultural workforce in labor organizations ... is scarcely an all-purpose measure of union strength or influence— at the workplace, in a community, or in the larger society— on compensation, on the role of the strike, on legislative matter, on voting patterns, on the role of retired members who are not counted, or on public opinion or the community. It is hard to believe that labor organization in the society today, in the year of the national accord, is one-fourth less in some gross sense, than it was in 1948, one year after the Taft-Hartley Act was enacted" (Dunlop 1980, p. 399; in Michael Goldfield, 1987).

Empirical work that has sought to analyze the variations in theoretical variables have been carried out by researchers. A key reason for doing this work was the desire on the part of industrial relations scholars to understand figures and trends that relate to union coverage. Freeman (1988) sought to probe the union growth by studying the contraction and expansion of union membership in the public and private sectors during the 1970s and the 1980s. Freeman studied the potential effect of structural change, union organization and managerial resistance. He found substantial evidence of decline in private sector union membership and
attributed most of the decline to managerial resistance.

In studying the decline in union membership from 1950-1980, Dickens and Leonard "decomposed sources of union growth and decline into changes in organizing activities, success in certification elections, and net growth due to economic causes" (p.323). They found that "the decline in the rates of organizing and election success are important determinants, and that the state of the economy and the economic positions of organized firms may not be important beyond the poor performance of the entire economy in the 1970s" (p. 333).

While these arguments are all valid, it is important to recognize that Leonard and Dickens did not specifically include indicators of regional and industrial/sectoral economic performance into their model. Thus while it may be true that general economic performance was poor in the early 1960s and the 1970s, it may also be true that regional and sectoral economies performed differently. For instance, at the sectoral level, Roomkin and Juris (1978) note that comparing 1956 to 1976, union penetration in construction and manufacturing fell. Lawrence notes that while several reasons account for this decline, it is also true that "recent plant closures in industries in which unions have traditionally been strong, such as automobiles, steel, rubber, and meatpacking, have accelerated labor's losses" (p. 201).
In 1985, Henry Farber postulated an econometric model of union growth which he used to analyze the question of how much of the decline in unionization could be attributed to sectoral shifts from a manufacturing based economy to a services oriented economy and how much could be explained by increased manufacturing employment in the south. (p. 16). Farber, concluded that "the evidence suggests that the simple explanation for the decline that employment has shifted away from the manufacturing sector and toward the south, cannot account for a large percentage of the drop in unionization" (p. 38).

Farber's methodology can be criticized in several ways. One, Farber assumes that the regional preference for unionization remained constant from 1953-1978. This is a very strong assumption which Farber did not substantiate in any way. Secondly, Farber used 1956 sectoral employment levels to compute 1976 levels. There was no attempt to justify this (p. 17). Thirdly the extent of unionization, was calculated as the weighted average of the 1978 region-specific unionization level, using as weights the 1953 region-specific employment levels rather than the 1978 region-specific employment levels (p. 19) also without any sort of theoretical or empirical justification.

Thus, Farber assumed that the dynamics determining sectoral changes in 1956 are similar to, or are the same as the ones that determined sectoral changes between 1956 and
1978. There was no attempt to justify this strong assumption. Fourthly, Farber lumped all the southern states and all the nonsouthern states together in his analysis. Obviously these states are far from homogenous, as far as taste for unionization is concerned, and employment growth in these states varied considerably between 1953 and 1978.

Though Farber found that these factors accounted for some of the drop in unionization, his conclusion that there are other factors that account for the drop implies that he does not believe these factors are very significant. Though the article is a good example of a demand side model, our understanding of union growth would be improved even further with the incorporation of supply side variables into the model.

2.2.1 The Impact of Union Organizing and the National Labor Relations Board (NLRB) on Union Coverage

It is important to understand the nature of the union organizing process and the functions and operations of the NLRB, in order to fully comprehend the mechanics by which workers join trade union in the United States. The government regulates the election procedure through its enforcement of enabling legislation in both sectors of the economy. Management is also an active player in the organizing process as it attempts to convince workers not to join unions (Freeman, 1988)
Freeman (1985), points to the decline in union organizing activity as a reason for the decline in trade union membership. Freeman, found "that the level of union expenditures per worker in organizing campaigns is declining and has been declining since the 1950s." Therefore it seems that the inability to organize white collar workers, and the seeming decline in union organizing activity, are also factors that help account for the declining proportion of the labor force that is unionized.

Voos (1984), found that union organizing expenditure rose between 1953 and 1977, (pp. 52) in contrast to Freeman who contended expenditure per worker had been falling since the 1950s. The probable reason for the dichotomy of findings is the level of analysis. Freeman's study was predicated on expenditures per worker while Voos study was based on total expenditures in current and constant dollars (p. 58). More important is Voos (1983) finding (a different empirical study), where she concluded that "larger organizing expenditures are associated with more organizing success, other things constant" (p. 52).

With respect to representation elections, labor unions won a majority of representation elections that were held in the early days. In recent years the winning percentage of labor unions has fallen dramatically. According to Gagala, in 1955 unions won two out of every three union authorization elections conducted by the NLRB, but lost more
elections than they won between 1975 and 1980" (Gagala, p. 1).

Seeber and Cooke (1983) contended that the lack of union success in winning representation election contributed significantly to reduced union coverage (pp. 34). Prosten (1978) concluded that the biggest obstacle to union growth was the decrease in the number of elections in the manufacturing industry, the result of increased managerial opposition to elections (pp. 240-248).

Shervin Freed and Joseph Lichko (1981), used NLRB certification election results (for the years 1977, 1978, and 1979) to analyze union climate. They found that the number of certification elections conducted in U.S. manufacturing industries, declined, and that the success rate of the unions involved in the years studied also fell (p. 9). On the other hand, the two researchers found that the average number of employees involved with certification elections increased.

The authors found it difficult to generate conclusions about the success of unions in non right-to-work state as compared to union success in right-to-work states because of the "variation in union success rates for individual states within the two groups" (p. 45), that they observed from the results of their analysis.

Furthermore, Freed and Lichko found that "organizing success rates varied dramatically with voting unit size" (p.
Specifically they observed that unions won 45 percent of elections when the number of employees voting is less than 50, 32 percent when voting units are greater than 1,000, and 25 percent when the voting units contain between 400 and 1,000 employees (p. 51). They also found regional variations in the relationship between success rates and voting unit size.

Finally Freed and Lichko "found no significant relationship between the frequency of union elections and the degree of union membership in a state" (p. 57) although their data indicated "that where there was already a strong union presence, there was likely to be more successful union elections" (p. 57), and that election activity in service industries was not keeping pace with the growth of the sector (p. 61).

The number of elections to decertify existing unions has also increased. Gagala (1983) noted that "between 1968 and 1978, a 200 percent increase occurred in the number of NLRB conducted decertification elections. In 1978, unions lost 74 percent of the decertification elections conducted" (p. 1). Fulmer (1982) observed that "the number of decertification elections has increased dramatically, and that unions are losing an increasing percentage of both decertification and certification elections" (p. 1). He argued that one of the reasons why "U.S. unions represent a decreasing percentage of the work force is the declining percentage of union
victories" (p. 1). Thus not only were unions winning fewer elections, the number of elections held to decertify unions increased, though membership loss (in absolute terms) in these elections were small (Freeman, 1988).

Some researchers have argued that the ideological bent of the members of the NLRB plays an important role in union coverage. This argument is predicated on the assumption that the ideological leanings of board members somehow affects interpretation of the law by the board. Sandver for example noted that:

"several recent National Labor Relations Board decisions have changed the rules of collective bargaining. For example, rules that allow employers to restrict union solicitation in the workplace (Our Way Inc., 268 NLRB 394 1983), to question employees about their union sentiments prior to NLRB representation elections (Rossmore House, 269 NLRB 1176 1984), and that the employer is under no obligation to obtain the union's consent when he or she relocates work from a union facility to a nonunion facility to obtain lower labor costs" (Sandver 1987, p. 112).

On the whole the evidence suggests strongly that the impact of the "new" interpretations of the legislation, the declining success rate, and the increasing number of decertification elections, is that unions have found it harder to organize new members.
2.2.2 The Impact of Managerial Resistance on Unionization

What is the impact of managerial opposition on union coverage? The answer to this question is very important in any thorough analysis of union coverage. Freeman (1988) strongly contended that managerial resistance is the key factor in diminishing union coverage. To quote Freeman "the antiunion management offensive in the private sector is the key to de-unionization of the United States" (p. 79).

Freeman and Medoff (1983) noted that, "managerial opposition to unionism has increased in leaps and bounds since the 1950s" (p. 230). The authors emphasize the increased use of labor management consultants in opposing unions, the use of enlightened human resource policies and insights from research in the behavioral sciences in an attempt to reduce the extent of job dissatisfaction among workers, and the increasing use of overt tactics, such as tough legal campaigns and the outright breaking of labor laws to forestall the unionization wishes of employees.

John Lawler (1984) likewise found that management consultants had a significant negative impact on union organizing, especially with respect to union certification elections (pp. 38-51). Dickens (1983) concluded "that company campaigns have a significant negative impact on union election victories" (pp. 560 - 575). Fred Foulkes (1981) in his study of 26 predominantly nonunion manufacturing firms, found that, "the firms had a variety of
human resource policies that enabled them to maintain their nonunion status."

Thompson (1981) on his part, notes the effect of employer resistance in the legal (NLRB election) and non legal areas, on union membership and also the effect of an ancient and archaic union structure on membership. Thompson argues that "the present union structure is not conducive to encouraging white collar workers to organize in what are overwhelmingly blue-collar unions". Furthermore Thompson argues that "the bargaining structure makes members parochial and that there is little chance of changing that" (p. 166).

Thus, employers - in a throw back to the 1920s and the days of welfare capitalism -, are instituting a variety of human resource policies for managing their employees. These policies "seem" designed to increase "perceived" employer responsiveness to the needs of workers so as to keep unions out. It can also be argued that employers are simply responding to the high cost of unionism in the advent of increased global economic competition.

Therefore at one level it can be argued that employers (through their control of capital) are simply exploiters of labor - the neo-marxist perspective. On another level a strong case can be made of a pragmatic group of employers who are simply responding to signals from the global economy - the neo-classical perspective -, and thirdly an argument can be made that increased employer resistance to
unionization is a combination of both factors - the institutional perspective.

2.2.3 The effect of Changing Job Structure on Unionization

As a percentage, union organization has traditionally been highest in blue collar occupations. Several reasons have long been cited for this, including technology and the nature of the job (simple control, technical/machine control, bureaucratic control), poor working conditions, and the concentration of workers under one roof each doing similar monotonous jobs (this last reason can perhaps be labelled Taylorism).

On the other hand it is often argued that unions have found it harder to organize white collar workers. On careful examination of the evidence (absolute numbers), a strong case can be established for some modicum of success in organizing white collar jobs. After all, teachers, policemen, firemen, and other public sector workers are free to join unions (given certain restrictions). A number of works that has studied the incidence of unionism among faculty has also been published.

Galaga (1983) notes the effect of the changing job structure on union membership. The decline of "manufacturing jobs in such industries as automobiles, steel, rubber, and electrical appliances is contrasted with the growth
occurring in service industries such as medical care, food service, banking and insurance" (p.3).

According to Gagala (1983) "between 1959 and 1979, the number of white collar workers increased by 20 million, while the blue collar work force increased by only 10 million" (p. 3). Juris and Roomkin (1980) argued that "there as been a long term shift in the composition of the manufacturing labor force. White collar and technical employees - two groups historically resistant to unions- now account for a much higher proportion of total employment (p. 198). Osterman (1985) notes the difficulty unions have had in organizing white collar occupations and jobs. This difficulty is significant because of the increasing number of white collar jobs in the U.S. economy (p. 176)

On the whole, it seems to me, that part of the reason why unions find it difficult to organize white collar jobs is related to differences in the nature and characteristics of blue collar as opposed to white collar occupations. When both sectors are aggregated union organizing is highest for blue collar occupations.
The attitude of workers towards unions, and the general ideology towards unions is often cited as an explanation for declining trade union membership. Lipset (1986), "used differences in public attitudes about unions to explain the divergence in union growth rates between the U.S. and Canadian unions" (in Sandver 1987, p. 113). Lipset, found that attitudes of workers towards unions and the general attitude of the public towards unions is a major determinant of union growth.

One tendency in studying attitudes as an indicator of union prospects is to focus on blacks, women and other historical minorities in the workplace. It is often argued that blacks are more likely to join unions. For example Kochan in his study of how American workers view unions (1979) wrote that "non whites appeared to be willing to join unions as a matter of course" (p. 27).

Freed and Lichko (1981) observed that "manufacturing facility planners are frequently afraid to locate operations in areas whose population contains a high percentage of minorities on the belief that minorities can be influenced more easily and, consequently, are more susceptible to the organizing overtures of unions" (p. 57). However the authors could not establish a statistically significant relationship between a high percentage of minorities in a geographical
area and high union organizing success.

There is no doubt that the percentage of blacks in the labor force has been increasing. Foner (1982) reports that between 1928 and 1970 black trade union membership rose from 200,000 to between 2,500,000 and 2,750,000 (pp. 173 and 425). Foner goes on to argue that the major reason for the increase is the fact that most blacks work in those industries and those blue collar jobs that unions have traditionally found easy to organize. "In such industries as auto, steel, and metal fabricating, retail trade, food-processing and meat-packing, railroading, medical services, and communications, blacks numbered one-third to one-half of the basic blue-collar workers" (p. 425). Whether or not this increasing number of workers will join unions and in what proportions remains to be seen.

The impact of the growing number of women in the labor force on union membership has also been well debated and studied. Historically women have been concentrated in service type jobs and women penetration of the trade union ranks pales compared to men. Now that increasing number of women are taking those "traditionally" male jobs, the debate as focused on how this would affect union coverage. LeGrande (1987), Bergquist (1974), Dewey (1971), all argued that the proportion of women union members has not kept pace with their entry into the labor force.
However, Needleman and Tanner (1987) in their study of the union joining behavior of women, concluded that although the percentage of women in American unions declined from 14.9 percent in 1956 to 13.2 percent in 1985, the proportion of women among all union members rose (p. 188). This implies that in an environment of declining union membership, the rate of decline for men is greater than the rate for women.

Thus Thompson (1981) notes that nonwhites are more likely to be union members than whites, that women and nonwhites have been increasing their degree of unionization in recent years, and that union membership is densely concentrated in certain states ("New York, Michigan, West Virginia, Pennsylvania, and Washington have more than 40 percent of their labor force unionized, while Mississippi and North and South Carolina have less than 15 percent") (p. 164).

A second group of empirical studies has looked at the impact of age, sex, and race on union joining behavior. Kochan (1979) found that "young workers are as willing (or unwilling) to join as older workers, women at least as willing as men, and white collar workers apparently as willing as blue collar workers" (p. 27).

Looking at the empirical evidence it becomes clear that two of the important underlying factors driving attitudes towards labor unions for all races, sexes, and age groups, is level of educational attainment of the individual and his
or her community of influence, and urban versus rural dwelling.

The amount of education a person receives is almost always directly related to occupation and herein lies the importance of education. If unions find it easier to organize blue collar as opposed to white collar jobs, then a strong case can be made for the argument that the higher the amount of education an individual receives the smaller the chances such an individual will join a labor union. For example, Juris and Roomkin (1980) wrote that "women, younger workers, and highly educated people now comprise a larger portion of the total labor force. These are also groups long known to be relatively more resistant to unionization (p. 198).

Urban living should also be positively correlated with union joining behavior on the assumption that urbanization results in a breakdown of traditional authority and therefore more willingness to challenge authority with unions.

2.2.5 The Effect of Right-to-Work Laws on Unionization

Industrial Relations experts and trade unionists, have always been concerned with the difficulty unions have traditionally faced in organizing in the presence of right-to-work laws. Right-to-work laws by outlawing the union shop makes organization harder and labor unions see right-to-work
laws as manifestation of an anti-union sentiment.

The AFL-CIO (1958), argued that right-to-work laws exist basically to destroy union security. Gagala argues that "right to work is more than a law that prohibits mandatory union membership, because it keeps unions small, weak, and disorganized (p. 3). Empirically researchers have sought to isolate the impact of these laws on union membership, and have also sought to determine if the free-rider hypothesis outweighs the tastes hypothesis. Farber (1984), writes that the free rider hypothesis implies that if "demand is affected in offsetting directions by right to work laws, supply relative to demand will be reduced by right to work laws, and the observed union/nonunion differential will be affected in offsetting directions by the presence of right to work laws" (p. 330). The tastes hypothesis on the other hand, suggests that the right to work laws have no real effect, but that they will be associated with a lower demand for union representation, a supply of union jobs relative to demand that is largely unrelated to the laws, and a larger observed union/nonunion differential" (Farber, p. 330). Farber's results indicated that the "lower extent of unionization in right to work states is largely a reflection of tastes against union representation rather than a real effect of the right to work laws through the free rider mechanism" (p. 351).
Other scholars, for example, Bluestone & Harrison (1982) have found that the free rider mechanism plays a significant role in the inability of unions to organize southern regions. Hirsch (1980), found right to work laws to be significant in determining membership but not coverage (in Hunt, p. 49). Janet C. Hunt (1983), tested the free riding argument against the saturationist hypothesis. The saturationist hypothesis "predicts a higher level of organizing activity in right to work states as a result of large concentration of unorganized workers" (p. 47). Hunt found "no evidence to suggest that free riding in contract behavior is an important phenomenon in right to work states" (p. 54).

Other researchers have looked at the effect of right-to-work laws, as part of the migration of capital to right-to-work states, especially those states in the southern and western regions. The results of these empirical studies suggests strongly that right-to-work laws have a negative impact on union coverage. Galaga (1983) found that union membership is concentrated in ten highly industrial states that have been losing jobs. At the same time southern states which are experiencing a net gain in jobs and population, have right to work laws that make union organization difficult.

Juris and Roomkin (1980) argue that "the focus of manufacturing activity has moved to the southern and western
states, from the midwestern and eastern states. The sunbelt and west has historically been resistant to unionization (1980, p. 199). Bluestone and Harrison (1982) speculate that perhaps the major reason why capital has been moving from the traditionally highly industrialized and unionized northern regions to the southern regions is the desire to avoid unions.

In a major conceptual piece presented to the 1986 Spring meeting of the Industrial Relations Research Association, Kaufman, Eisenstadt, and Young contended that "one of the main challenges facing the American trade union movement is organizing the south" (p. 487). Going further, they argue that "recent economic trends have given the task of organizing the south an added sense of significance. Over the past 15 years, manufacturing employment in a number of the more heavily unionized states in the North has either stagnated or declined, while the less unionized states in the South and Southwest have all enjoyed sizeable percentage increases" (p. 487).

The authors note that, "even though these developments have received a good deal of public attention, there remains a surprising lack of research on the entire issue of southern economic growth and its implications for unionism and the progress of unions in organizing the south" (p. 487).
Noting that "historically the heartland of unionism in the U.S. has been the tier of industrial states stretching along the Great Lakes from Wisconsin to New York" (p. 480), Kaufman, Eisenstadt, and Young argue that, "one reason for the decline in union membership over the past 15 years has been a significant decline in manufacturing employment in the highly unionized states of the industrial north, and a considerable gain in employment in the less unionized states of the south and southwest" (p. 488).

Table 2

Regional Patterns in Manufacturing Employment Growth, Unionization, and Union Organizing Success

<table>
<thead>
<tr>
<th>Region</th>
<th>% change manu employ 1970-1984</th>
<th>% unionized employment 1982</th>
<th>% nonunion workforce voting in NLRB employment</th>
<th>%union success voting in NLRB NLRB elections 1981-1982</th>
</tr>
</thead>
<tbody>
<tr>
<td>New England</td>
<td>3.4</td>
<td>16.8</td>
<td>.7</td>
<td>41.2</td>
</tr>
<tr>
<td>Middle Atlantic</td>
<td>-23.6</td>
<td>27.6</td>
<td>.8</td>
<td>46.1</td>
</tr>
<tr>
<td>East North Cent</td>
<td>-16.8</td>
<td>27.5</td>
<td>.7</td>
<td>40.3</td>
</tr>
<tr>
<td>West North Cent</td>
<td>8.4</td>
<td>17.8</td>
<td>.5</td>
<td>43.2</td>
</tr>
<tr>
<td>South Atlantic</td>
<td>14.7</td>
<td>14.5</td>
<td>.5</td>
<td>39.0</td>
</tr>
<tr>
<td>East South Cent</td>
<td>8.9</td>
<td>16.3</td>
<td>.8</td>
<td>39.0</td>
</tr>
<tr>
<td>West South Cent</td>
<td>28.5</td>
<td>13.1</td>
<td>.4</td>
<td>39.9</td>
</tr>
<tr>
<td>Mountain</td>
<td>65.5</td>
<td>17.0</td>
<td>.5</td>
<td>42.8</td>
</tr>
<tr>
<td>Pacific</td>
<td>27.2</td>
<td>29.5</td>
<td>.9</td>
<td>41.2</td>
</tr>
<tr>
<td>United States</td>
<td>1.2</td>
<td>21.9</td>
<td>.7</td>
<td>42.0</td>
</tr>
</tbody>
</table>

In Kaufman, Eisenstadt, and Young p. 492
Lastly, Kaufman, Eisenstadt, and Young noted that "the regional change in manufacturing employment is itself a function of the capital investment decision of American companies, as they decide where to build, expand, contract, and close manufacturing facilities" (p. 488).

The literature on right-to-work laws indicates that the presence of these laws can be isolated regionally. That is states in the south and western regions are more likely to have these laws on their books. The literature also shows that union membership, is lower in right-to-work states compared to non right-to-work states. However there is little agreement about whether right-to-work laws in and of themselves deter unionization (the free rider hypothesis), or whether workers in right to work states have no taste for unions (the tastes hypothesis).

2.2.6 Summary of the Discussion of Factors that has Affected Union Coverage in the Private Sector

Empirically, the decline in manufacturing employment that started in the mid to late 1970s is a major reason for the decline in union coverage. Other factors that have contributed significantly to the decline of the labor movement include, "the breaking and stretching of the NLRA to prevent union organization, the breaking and stretching of the law to decertify unions, the defeat of the Labor Law Reform Act in 1978, the use of sophisticated management
techniques to deter union organizing, and obstacles to organizing that emanate from trade unions themselves" (Galaga 1983, pp. 3-10).

As the literature review demonstrates, unionization in the private sector has always fluctuated widely and has been affected by a variety of factors. Overall, the intelligent conclusion about the future of trade unionism in the private sector, seems to be one that says "lets wait and see."

2.3 UNION MEMBERSHIP IN THE PUBLIC SECTOR

As in the private sector, "employee organization among local and government employees dates back to the beginnings of the American labor movement, although the earliest attempts to organize were sporadic, limited and relatively ineffective (Spero and Copozzola, 1973).

By the late 1950s, relatively few public sector employees were union members (Walsh, 1969.), but by the middle of the decade of the sixties, membership in public sector unions was increasing very rapidly. "In absolute numbers, union membership continued to grow until 1976, although the percentage unionized had been steadily declining since the mid-1950s" (Reder, 1988, p. 99).

John F. Burton Jr. and Terry Thomason (1988) conducted a time series analysis into union membership in the public sector and arrived at the same conclusion, that union membership in the public sector was limited prior to the
Several researchers have probed for the reasons why public sector union membership was so limited prior to the 1960s. Kearney (1984) for example, argue "that there seem to be three principal factors which inhibited public sector unionism and collective bargaining prior to the 1960s: ideology, the nature of government employment, and an unfavorable legislative climate" (p. 25).

Since past research has clearly shown that union membership in the public sector was very low prior to the 1960s and that membership rose significantly starting in the 1960s, the question then becomes "why did membership rise so dramatically starting in the 1960s? Did the factors that inhibited growth prior to this decade change and if so why and in what direction?"

Past research conducted to answer these and similar questions has resulted in a mixed bag of answers. Kearney and Dekker postulated that the factors that contributed to the explosion of union membership in the public sector were "(1) the growth of government; (2) the private sector experience; (3) changes in the public sector legal environment; (4) the social change and turmoil which characterized the 1960s and early 1970s (p. 11). Summarizing, their arguments, Kearney and Dekker contended that "to a large extent, public employees join unions for the same economic, social, and psychological reasons as
their counterparts in private sector jobs" (p. 16).

Harvey Friedman (1969) argued that the great leap forward in public sector collective bargaining which came in the middle and late 1960s was the direct result of the promulgation of Executive Order 10988, the Magna Carta of Federal collective Bargaining" (p. 28) and that "the development of state and municipal collective bargaining stemmed directly from the issuance of the executive order" (p. 28). Friedman, went on to argue the demand for unions by public sector employees was also predicated by the realization "that the industrial worker had caught up with and in many cases had passed him on the ladder of success" (p. 29).

Other significant factors according to Friedman, were "the expansion of the government workforce, as the role of the government in education and public welfare produced a geometric jump in employment" p. 30), and the help the AFL-CIO provided workers in the public sector, as the federation "realized that the public sector had become the largest industry in the country". (p. 30).

Walsh argued that changes in the political environment, specifically the election of John F. Kennedy as President of the United States in 1960 was a major factor, as Kennedy signed several executive orders which seem to have greatly contributed to the increase. A second factor cited by Walsh was the disparity between public and private sector wages,
while Sterling and Capozzola (1973) found that "favorable legislation was the catalyst for the rapid growth of trade unionism in the public sector" (p. 37).

Bent and Reeves (1978) on their part argued that the need to increase public sector salaries and fringe benefits were the major reason why public sector unionism spread starting in the 1960s. The authors quote Howard Coughlin (president of the Office and Professional Employees International in 1966) as saying "the underlying reason for organization (of white collar employees) and subsequent collective bargaining is money..... We must continue to emphasize money as the incentive for unionization and collective bargaining" (p. 11). Secondly, Bent and Reeves contended that the "disenchantment of white-collar workers with the decreasing challenge of their work in only being allowed to perform prescribed tasks that are mechanized, routine and boring" (p. 13) also contributed to the increased demand for unions in the sixties.

Thus by the sixties the importance of the public sector to union membership and growth had become very apparent to the leadership of the labor movement, to practitioners, and to researchers. According to Spero and Copozzola (1973) "as of October 1971, public employees constituted approximately one sixth of the nation's work force and that while only 540,000 public employees were members of unions in 1944, and only 900,000 were union members in 1955, by 1971 there were
more than 3 million employees in state and local public governments who held union or association membership cards" (p. 14). Factoring in union membership in the federal sector significantly increases the 1971 figure to 13 million (p. 37).

The question then becomes "will the increase in public sector union membership continue at the same pace?" The consensus of past research seems to be that the torrid pace of the sixties cannot be sustained. Kearney (1984) for example, argued that "public sector unions are not likely to enjoy the growth they enjoyed during the late 1960s and early 1970s, because of incremental legal changes since 1976, dim prospects for federal legislation or comprehensive legislation in non-collective bargaining states, increased managerial resistance to unions, and slowdowns in public sector employment at all levels" (p. 34)

2.3.1 Summary of the Discussion of the Factors that Has Affected Union Coverage in the Public Sector

Public sector unionism really took off in the 1960s. Changes in the legal environment seem to be most important in explaining the growth. Reder (1988) argued that "the spurt in union adherence accompanied or followed hard on the heels of changes in labor law at all levels of government that were favorable to collective bargaining" (p. 104). Others have argued that the great increase in membership
reflected pent-up demand for unionization in this sector.

However recent evidence indicates that the spurt in growth has declined. Freeman (1986) concluded that "there is some indication in the growth curves for public sector union organization that the spurt in union membership came to an end. From 1972 to 1980, the share of state and local full-time employees with employee organization representation was virtually unchanged at almost 50 percent" (p. 48).

Reder isolated the point at where union membership in the public sector started declining to 1976. Reder presented data that indicated that "public union membership reached a peak of about 6 million in 1976 and declined to 5.3 million in 1984", and that the unionized percentage peaked in 1976 at 40 percent, declining to 33 percent in 1984 (p. 105).

Finally there is a consensus of opinion that it is more difficult to measure changes in public sector unionism because of differences in state laws and enforcement.

2.4 DISCUSSION

The results of and insights from past research efforts has proven very useful in getting an understanding of the union growth process in the United States. A thorough and intense examination of these results and insights indicate that structural employment patterns, educational attainment, wages, demographic factors, and the labor climate (union organizing, management resistance, governmental activities
and the public's perception of trade unions, are the major factors that determine the percentage of the non-agricultural labor force that is unionized in the private sector. In the public sector enabling legislation and enforcement of public sector collective bargaining laws seem to be the most important determinants of union coverage.

Equally important is the finding of a decline in private sector union membership, which gains in the public sector have not been able to cover. Private sector decline takes on a different contour when it is combined with slowing gains in the public sector.
CHAPTER III
OPERATIONALIZING THE THEORETICAL MODEL

3.1 INTRODUCTION

The purpose of this chapter is to discuss the unit of analysis and methodology used in the analysis. This dissertation uses state-year as the unit of analysis and the pooled cross-sectional time series method as the analytical method. The pooled cross-sectional time series analysis is superior to both conventional time series analysis and cross-sectional analysis for the research problem being studied. A discussion/critique of relevant previous empirical work is also presented.

Due to the presence of heteroskedasticity and autocorrelation, generalized least squares is used as the estimation method. This estimation method is far superior to ordinary least squares and two stage least squares for the purpose of this research effort. Finally, I discuss the basic analytical method that is used in the analysis as well as other possible methods to demonstrate the superiority of the analytical method used.
3.2 THE UNIT OF ANALYSIS

The unit of analysis is state-year, since the dissertation uses time-series and longitudinal data collected at the state level. At the national level, the analysis uses 550 cases (50 states by 11 years). At the regional level, the number of cases is based on the number of states that comprise each region.

Each variable in the design has a unique value for each state and year. The variables proxy for the effect of industrial composition - manufacturing and government sectors -, educational attainment, unemployment, demographic characteristics, union organizing and managerial resistance, and legislation on the percentage of the non-agricultural labor force unionized. Furthermore, each variable value, varies within the cross-section and over time.

There have been a few good empirical analyses of the relative impact of the variables that are theorized to determine union growth. None of these efforts analyzed the problem by building up from the state level nor were many of the important variables proxied. Past research has tended to be either at the individual level or aggregate level, for the private sector or for the public sector. Model building based on state level data allows all these separate components to be included in the same model.

Freeman (1988) is perhaps the one best effort, so far, to use a reduced form equation to analyze union growth
patterns. Though Freeman's model is located at the national level of aggregation and did not include some of the key and interesting variables that impact union growth, his results strongly indicate that management resistance is a key determinant of declining unionization.

Dickens and Leonard (1985) "regressed the growth of union membership due to economic causes on the growth rate of GNP lagged one year, and a time trend" (pp. 329). The authors assessed the effect of the success rate in union organization and the rate of organization in National Labor Relations Board elections on union growth. They found that "net growth due to economic factors explains the greatest part of the difference" (pp. 329).

Farber, in analyzing the impact of sectoral and regional shifts in employment on the extent of unionization in the U.S., used a methodology based on certain assumptions that questions the overall viability of the results (see literature review for a critique of Farber's methodology). Farber, writes that "the evidence suggests that the simple explanation for the decline that employment has shifted away from the manufacturing sector and toward the south, cannot account for a large percentage of the drop in unionization" (p. 38).

Using different methodologies, the three sets of articles arrived at quite different conclusions about the effect of several key factors on union growth. This research relates
to the research efforts cited above, (as well as those discussed in the literature review) because the primary purpose of this research effort is to assess the impact of differences in structural changes, educational differences, demographic characteristics, union organizing and management resistance and legislation on union membership growth. However, this research effort is an attempt to go beyond the research efforts cited above because:

1. A number of variables and data that were not included in the above mentioned research efforts were included in the analysis.

2. The model was aggregated from the state level to the regional and national levels for analytical purposes. Thus, the percentage of the non-agricultural labor force that is unionized, is analyzed by aggregating consecutive and consistent cross-sectional and time series data collected at the state level into the country (the United States) and regions.

3. In reference to past research where for example, the basic question of why unionization is slower in the southern states, (despite a relatively greater increase in employment), was left unanswered, and where structural changes were taken for granted, this research effort takes these important issues into consideration. Pooling the data into regions allows an examination of the relative effect of the independent variables at
this level and informs the results of analysis at the national level.

To summarize, the results of previous empirical efforts suggest that unions may find it difficult to recruit new members if employment growth (especially industrial employment) is highest in southern and right-to-work states and if managerial resistance to unionization efforts is intense, unless the preference for unionization in right to work and service type industries changes dramatically and unions work extremely hard at organizing new members in areas and states that have been traditionally hostile towards labor unions.

3.3 METHODOLOGY

Past empirical analysis of the union growth question has been based on analysis using ordinary least squares (OLS). Given this fact, the key question that needs to be asked is whether the OLS estimation method is the best statistically for a pooled cross-sectional, time series analysis design. OLS provides the best linear unbiased estimate (BLUE) only when all error term assumptions have been met, especially the assumption of homoskedasticity, which states that the variances of the error terms are identical for all observations (note that the state is the unit of analysis), and nonautocorrelation, which assumes that no correlation exists among the error terms of all observations.
3.3.1 The Problem of Homoskedasticity and Heteroskedasticity

From a statistical perspective, the assumption of homoskedasticity is likely to be violated in this study for two reasons. One, if the diagonal elements are not identical. The diagonal elements are not likely to be identical if (1) there were errors in recording data. The impact of inaccurate data is reflected in the variances of the error terms, which gets larger as a consequence of incorrectly recorded data, and (2) when data is computed and aggregated as percentages, ratios, proportions, or mean values. Since the number of data points vary (for example a state with 750,000 employees in its manufacturing sector as opposed to a state with five million employees employed in manufacturing), it can be expected that for every variable, the larger the number of cases the lower the variance (Hanushek and Jackson, 1977: 143).

Secondly, the assumptions are violated when any type of cross-sectional data based on a microeconomic unit of analysis such as household or firms is used in the analysis. For example, the variance of the independent variable consumption, around the dependent variable is expected to be low for a low income family as opposed to a high income family (see Theil, 1971: 245). This condition can be directly treated by applying GLS (see Judge, Griffiths, Hill, and Lee, 1980: 126). However this factor is not expected to cause heteroskedasticity in the empirical model,
because the analysis is not based on microeconomic units.

Given the fact that the data used in the analysis are secondary, it is highly likely that the assumption of homoskedasticity is violated. The possibility of human error in collecting and recording the data cannot be discounted. However the checks and balances employed in the data collection, recording, and publishing process indicates that such errors should be minor and are likely to mitigate each other in the long run.

The assumption of homoskedasticity may also be violated because the analysis uses state as the unit of analysis. The variables included in the analysis were computed as averages, percentages or ratios of total employment, population size, and National Labor Relations Board (number of unfair labor practice complaints received and number of workers eligible to vote in representation elections) data within each state. This raises the possibility of heteroskedasticity because the variances of error terms differ by number of cases (for each variable) within each state. States with smaller populations and employment size can be expected to have higher variances than states with larger population and employment sizes. Thus the variances of the error terms is expected to vary more among states over time, but is expected to vary less within a state over the same time period.
Other factors that result in variation across states include differing levels of technology, products manufactured, product demand, profit level, market competition, and ideological conservatism as opposed to liberalism (especially as captured in enabling legislation, for example, the presence or absence of public sector laws and the restrictions that such laws may impose on unionization, and the presence or absence of right-to-work laws). Therefore from a purely statistical and theoretical perspective, the assumption of homoskedasticity is likely to be violated. Since the assumptions of homoskedasticity are violated, weighted least squares, that is, GLS is the proper estimation method to use (Judge, Griffiths, Hill, and Lee; 1980, Kmenta, 1971; Hanushek and Jackson, 1977).

The appropriate method to correct for heteroskedasticity depends upon the assumptions that are made about the variances in the observations. For example it can be assumed that the standard deviation of the dependent variable is a linear function of several independent variables, which implies that the GLS estimator for goodness of fit is:

$$\beta = (X'\Phi^{-1}X)^{-1}X'\Phi^{-1}y$$

$$= \left(\sum_{i=1}^{n} (z_i'\alpha)^{-2}x_i'x_i\right)^{-1} \sum_{i=1}^{n} (z_i'\alpha)^{-2}x_i'y_i \tag{1}$$
or that the variance of the dependent variable is a linear function of several independent variables, which implies that the GLS estimator for the goodness of fit is:

\[ \beta = (X'\phi^{-1}X)^{-1}X'\phi^{-1}y \]
\[ = \left( \sum_{i=1}^{n} (z_i'\alpha)^{-1}x_i'x_i \right)^{-1} \sum_{i=1}^{n} (z_i'\alpha)^{-1}x_i'y, \] (2)

3.3.2 The Problem of Autocorrelation

Autocorrelation exists if the error terms associated with each observation is correlated. Autocorrelation is generally associated with time-series models as opposed to cross-sectional models. In a cross-sectional model, autocorrelation will be present only if the data are based on some type of natural ordering, or if the cross-sections are not derived from a random sample of cross-sectional units (Judge, Griffiths, Hill, and Lee, 1980, p. 170).

1. There are other alternative heteroskedastic structures and other methods for correcting for heteroskedasticity in the literature. These alternative methods include cases where it is assumed that there is no restriction on the variance of the dependent variable, where it is assumed that variances are constant within subgroups of the observations but vary from group to group and variations of instances where it is assumed that the standard deviation or the variance of the dependent variable is a linear function of a set of independent variables. Treatments for this instances include maximum likelihood and including dummy variables in least squares.
Since the possibility of the disturbance term of one state to be associated with the error term in another state, is statistically insignificant, it is assumed that cross-sectional autocorrelation is not a factor. As such only a discussion of the potential problem of time series autocorrelation and how it is treated is presented.

Time series autocorrelation is frequently the result of theoretical conceptualization which results in omitted variables and an inadequate model specification. However one should be careful before ascribing the presence of autocorrelation to this source (Maddala, 1977, p. 291). The likely reason for autocorrelation over time in this dissertation is the strong possibility for the disturbance effect of an independent variable on the dependent variable, to be present for the same independent variable, within the same state, especially for the next year. Since the time unit for each observation is a year, and since there is no evidence of the existence of higher order autoregression over time, I assume that the mechanism producing autocorrelation over time is the first-order autoregressive process (AR(1)) (Hibbs, 1974, p. 262), which is modelled as follows:

\[ et = \text{pet-1} + vt \]  \hspace{1cm} (3)
The existence of first-order autocorrelation implies that the effect of the disturbance is strongly felt initially and gradually declines over time (Theil, 1971 p. 251). This assumption looks like this:

\[ \sigma_e^2 = \frac{\sigma_u^2}{1 - \rho^2} \]  

(4)

The OLS estimation method is not capable of treating autocorrelation as it produces estimates which are not optimal and it is therefore necessary to use a different estimation method.

3.1.3 OLS versus Generalized Least Squares (GLS)

The problem of heteroskedasticity and autocorrelation rules out the use of the OLS method for analyzing data in this research effort. There are two basic reasons for this. One, any estimate derived using the OLS method will be inefficient because the variance estimator of the error terms will be biased due to the presence of heteroskedasticity. The actual extent of the bias will be dependent on the extent of heteroskedasticity in the observations. The result is that the estimates generated from the analysis will be unreliable and will lead to erroneous conclusions.
Secondly using OLS in a model where autocorrelation is present will produce estimates which are biased and inefficient. One of the possible consequences of using the OLS method when autocorrelation exists is that the results of a tested hypothesis will be reversed, making it easier to reject the null hypothesis (Granger and Newbold, 1974). It is therefore necessary to use a different estimation method.

The conventional method to treat for the presence of heteroskedasticity and autocorrelation is to use the GLS method. Because of the very strong possibility of observations being heteroskedastic and the equally strong possibility of the presence of autocorrelation the GLS estimation method was used in analyzing the data in this research effort. The basic GLS estimator can be written as:

$$\hat{\beta} = (X'\Phi^{-1}X)^{-1}X'\Phi^{-1}y$$

$$= \left(\sum_{t=1}^{T} \sigma_{t}^{-2}x_{t}x'_{t}\right)^{-1} \sum_{t=1}^{T} \sigma_{t}^{-2}x_{t}y_{t}$$

$$= \left(\sum_{t=1}^{T} x_{t}^{*}x'_{t}^{*}\right)^{-1} \sum_{t=1}^{T} x_{t}^{*}y_{t}^{*}$$

$$= (X'^{*}X^{*})^{-1}X'^{*}y^{*}$$

The GLS estimator is derived by weighting the inverse of the standard deviation of the corresponding error term for each observation and taking the estimator that minimizes the sum of squares of the weighted residuals (Judge, Griffiths, Hill, and Lee, 1980: 127. Since the R2 generated by an OLS estimation is not valid in a GLS estimation, because of the
possibility of heteroskedasticity and autocorrelation, statisticians have developed a method of testing for this by estimating the goodness of fit of the GLS estimation (see, Buse, 1973). The Buse R2 will be presented as the measure of the goodness of fit of the GLS estimation in the results. The SHAZAM econometric statistical package was used to operationalize the pooled cross-sectional, and time series design employed in this dissertation. SHAZAM has the capability to perform GLS estimations and to compute Buse's R2 (White, 1986).

3.3.4 Pooled Cross-Section and Time Series Analysis

The methods of data analysis to be used in testing the null hypothesis and in examining the research questions and estimated model is the pooled cross-sectional and time series regression analysis method. The data used in the analysis came from the Current Population Survey as well as a variety of publicly available sources. This means that the data are derived from relatively small sample sizes in contrast to the total population. By pooling the data, sample size is increased and more reliable estimates can be derived at different levels of aggregation (e.g. regions and country). Pooled cross-section and time series analysis is a more sophisticated technique than conventional cross-sectional analysis. Pooled cross-section and time series analysis has two major advantages over either conventional
time series or conventional cross-sectional analysis. First it allows estimation of models which explain two dimensions of the variation in the dependent variable—temporal and spatial. This represents a combination of the best attributes of cross-sectional (temporal) and time-series (spatial) analysis. Second, the pooling of multiple cross-sections means an increase in the number of cases in the analysis and so an increase in the degree of confidence in the statistical estimates derived from this process.

The pooled cross-section and time series analysis technique is ideally suited for the problem proposed in this study, because it provides for the type of rigorous, statistical methodology that is required to assess various temporal and spatial dimensions of the percentage of the non-agricultural labor force that is unionized. Pooling cross-section and time series allows the estimation of models that account for differences in behavior over cross-sections and time for each cross-sectional unit. The major limitation of this method is that substantively important regional or state specific patterns can be obscured when the data are pooled (Wallace, 1986). The solution to this problem is to perform separate analysis at the desired level of abstraction (regional or state). The general model for pooled cross-section and time series estimation, can be written as:

\[ y_{it} = \beta_{1t} + \sum_{k=2}^{K} \beta_{kt} x_{kt} + \epsilon_{it} \]  \hspace{1cm} (6)
Several alternative models for using the pooled cross-sectional and time series design have been proposed. Judge, Griffiths, Hill, and Lee proposed five alternative models that are based on theoretical assumptions about the direction of slope coefficients and variations in the effects of disturbances over individuals and time. Sayrs (1989) proposed four models each one of which is based on standard regression analysis, while Kmenta (1971, pp 509-516) proposed four alternative models for pooling cross-sectional and time series data: 1) the cross-sectional heteroskedasticity and time-wise autoregressive model, 2) the cross-sectional heteroskedasticity and time series autoregressive model, and 3) the cross-sectional heteroskedasticity and time series autoregressive model with cross-sectional autocorrelation, and 4) the error component model. However the appropriate model to use depends on the theoretical question being studied (Sayrs, pp. 14) and on the statistical package used to perform the analysis. Of the three, Kmenta’s proposal are the most relevant to this dissertation and as such will be discussed further.

Each of Kmenta’s models is predicated on a different set of assumptions. The first model measures the correlation between error terms at two consecutive years, for different states at a given point in time. It assumes the existence of cross-sectional heteroskedasticity and time wise autocorrelations, and also assumes the presence of
correlation of error terms across states. The second model assumes that parameters measuring autocorrelation between two points in time should be equal for all states. This assumption is clearly not relevant to this research effort. The third model assumes the existence of correlation of error terms across cross-sections, while the fourth model assumes that the disturbance terms are associated with time, cross-sectional units, both time and cross-sectional units, and that the correlations of the disturbances will remain unchanged over time.

Of the three models the first one is the correct one to use, given the statistical assumptions governing this dissertation, specifically the assumption of the existence of cross-sectional heteroskedasticity and time wise autocorrelations, but of no correlation of error terms across states (i.e. the presence of first-order autocorrelation is assumed), and the assumption that the effect of disturbances will diminish over time. The mathematical assumptions of this model is presented as:

\[ a) \ E(U_{i,t}^2) = \sigma_i^2 \text{ (cross-sectional heteroskedasticity)} \]
\[ b) \ E(U_{i,t} U_{j,t}) = 0 \text{ when } i \neq j \text{ (non-correlated error terms)} \quad (7) \]
\[ c) \ U_{i,t} = \rho_{i} U_{i,t-1} + \epsilon_{i,t} \text{ (time-series first-order autoregression)} \]

\[ i: \text{observations}, \quad t: \text{years} \]
3.4 RESEARCH DESIGN

The purpose of the analysis is to describe and evaluate the explanatory power of inter-state differences, (as related to the demand for unions and the supply of union jobs) in explaining the percentage of the United States non-agricultural labor force that is unionized, to probe the dynamic interconnections among the determinants of union growth, and to test the hypotheses and research questions.

A regression model that flows from the discussions presented in the theoretical model and from the literature review will be estimated. The percentage of the non-agricultural labor force that is unionized is the dependent variable. This decomposition captures the effects of interstate differences in the independent variables on the percentage of the non-agricultural labor force that is unionized. Using the basic regression analysis model, this can be written as:

\[ Y_{i,t} = B_1 + B_2I_{i,t} + B_3O_{i,t} + B_4M_{i,t} + e_{i,t} \]  \hspace{1cm} (8)

where \( Y \) represents the percentage of the non-agricultural labor force that is unionized, \( I \) represents a matrix of the state of the economy, \( O \) represents a matrix for the labor climate, and \( M \) represents a matrix for individual preferences.

This analysis allows the examination of the relative importance of the key independent variables, specifically,
the state of the sectoral employment, educational attainment, unemployment, wages, demographic characteristics, union organizing and management resistance and legislation on union growth. This allows a more rigorous analysis of the effects these variables have on union growth. (see figure 3-1 an illustration of the research design matrix).

3.5 PERIODIZATION: THE PERIOD OF THE 1970s

This dissertation is a study of the factors that determined the percentage of the non-agricultural labor force that was unionized between 1970 and 1980. There are two reasons why this period was studied. One, the golden age of unionization in the public and private sectors is widely believed to have ended in 1975. Secondly, the impact of the key manufacturing industry on unionization is likewise believed to have started diminishing in the 1970s. During the 11 years that characterize this time period, the U.S. was subject to structural changes in its economy caused essentially by the oil crisis, political changes (the ending of the Vietnam war) and social changes (for example increases in the labor force participation rates of women and other minorities).

The manufacturing sector was hit with an exceptionally high rate of layoffs and retrenchments starting in the seventies as the American economy underwent difficult
structural changes in response to stagflation (high unemployment and high inflation) that was widely experienced (Harrison and Bluestone 1982; see also Weisskopf, 1981). The average growth rate of the Gross National Product (GNP) fell from 3.3 percent in the 1960s to 2.2 percent in the 1970s. In this decade (1970s) the average inflation rate was 7.5 per cent, while the unemployment rate was 6.2 percent.

During the decade of the seventies the percentage of the population that were high school graduates rose significantly, most likely as a result of civil rights legislation and busing. However the number of unfair labor practice cases submitted to the NLRB increased substantially, an indicator of increased managerial opposition to the unionization desires of employees. At the same time it seems that the per capita amount of money committed to organizing the unorganized declined.

Thus it is erroneous to assume that this decade was stagnant when in reality it was characterized by important economic, social, and political changes. This dissertation seeks to analyze how these variations have affected union growth in the United States during the period of the 1970s. A thorough examination of this makes it possible to study the determinants of unionization in other time periods and facilitates comparison across decades.
3.6 SUMMARY

All the data that were used in the analysis are publicly available. The level of analysis in the dissertation is the state. The pooled cross-sectional and time series design is used to take advantage of the ability of this design to account for both cross-sectional and time series effects of the independent variables on the dependent variables. The GLS estimation method is used to correct for the existence of both heteroskedasticity and autocorrelation in the model. Two models were examined in the analysis. The first model pools the data at the national level, while the second model pools the data at regional levels using the Bureau of Labor Statistics (BLS) aggregation of states into regions.
CHAPTER IV
THE DATA AND DEFINITIONS

4.1 INTRODUCTION

The purpose of this chapter is to introduce the dependent variable and the independent variables and their measures, and to discuss the hypotheses that were tested empirically. The dependent variable measures the percentage of the nonagricultural labor force that was unionized between 1970 and 1980. The independent variables are classified into four broad categories that represent those factors that are hypothesized to have determined union growth in that decade: the sectoral employment, the state of the economy, the labor climate, and individual preferences. The operationalization of the theoretical variables is discussed and isolated in theory and previous research.

4.2 THE DATA FILE

The data file contains data on the dependent variable and the independent variables. The basic unit of analysis in this file is the "state year". Data collected at this level
(Alabama - 1946, Alabama - 1947, etc.) provides data at the basic level of the state, and also serves as the building block for higher-order levels of analysis (that is at the national and the regional levels). The file contains 550 cases (50 states by 11 years).

A large part of the data index economic and union membership indicators such as employment by state and by sector (manufacturing and government) and the unemployment rate. Another portion of the data reflects the effect of the prevailing labor climate on the percentage of the non-agricultural labor force unionized in the 1970s, demographic characteristics (specifically the percentage of blacks in the labor force), educational attainment, and the impact of right-to-work laws (a list of independent variables is presented in figure 4-1).

Analysis at the national and regional levels was done by pooling the state level data. States are presumed to constitute relatively homogenous economic/industrial entities, thus they are the logical units within which to identify variations in the independent variables and to assess the impact of these variations on union coverage.

4.3 THE DEPENDENT VARIABLE

The discussion in this section centers on the measurement of the indicator that constitutes the key dependent variable in the analysis. Retrospectively analyzing the percentage of
the non-agricultural labor force that was unionized in the 1970s will help in understanding how union membership grows in the United States. From this understanding comes different theoretical, empirical, and policy making attributes, which may inform future theoretical, empirical, and policy making activities. In this section the rationale for studying this question will be presented in some detail.

4.3.1 Percent Union

In the field of Industrial Relations, Labor Economics and to some extent in Sociology (i.e. Industrial Sociology), theoretical and empirical study of trade unionism has long been carried out. The percentage of the non-agricultural labor force that is unionized is a commonly-used indicator of union growth in the U.S. economy. This variable represents the extent of trade union organization of the U.S. labor force.

From a purely ideological perspective, one might wonder why trade unions exist and if they are a necessary part of industrial relations in an advanced economy. To me, the answer to this question is that the existence of trade unionism in the United States is based on the history of capitalist relations on the shop floor. Unions arose because workers felt that there was a need for them to pool their labor as a countervailing force and a bargaining chip in their implicit and explicit relations with the owners of
capital who controlled the economy.

The question that needs to be answered in my mind then becomes, "are trade unions still necessary in the United States today"? The answer to that question is very complicated. At one extreme there is plenty of evidence of labor exploitation by capital, while at the other end there are those organizations where labor is well treated and has dignity. However I believe that in any economic and political democracy, as long as some individuals feel a need to form and join unions, then it becomes necessary to study all aspects of union joining behavior.

The decade of the seventies (which has been described by some as the golden years of trade unionism in the United States), is particularly relevant to the study of union growth. If the 1970s was the golden age of trade unionism, then I submit that studying the relative impact of the theoretical variables that explain union joining behavior will inform the constituent industrial relations audience.

The measure of union coverage, PCTUNION, was computed by dividing total non-agricultural employment by the number of workers that were union members. Data on union membership by state was collected from Troy and Sheflin's "Union Source Book", and from the Bureau of Labor Statistics.
4.4 THE INDEPENDENT VARIABLES

The purpose of this section is to link the theoretical model and the operational model by defining and describing the independent variables used in the empirical analysis. The independent variables are based on the theoretical review presented in chapter II. The variables represent impact from both the public and private sector on union coverage and represent an attempt to include all publicly available theoretical variables into the empirical analysis.

4.4.1 State of the Economy/Sectoral Employment

Theoretically it has been hypothesized that unions find it easiest to organize firms in the manufacturing sector. Based on this fact it is often hypothesized empirically that manufacturing employment should always have a positive impact on union growth. However there are empirical reasons that suggest that this may not always be the case and that it is indeed possible for the relationship between manufacturing employment and union growth to be insignificant or even negative.¹

¹ Note that each relevant variable was computed with state level data before the data were aggregated at the regional and national levels.
The variable PCTMANUF (that is percentage of the labor force employed in the manufacturing sector) was computed by determining the proportion of workers (nonagricultural labor force) who are employed in the manufacturing sector and multiplying the proportion by 100; (PCTMANUF = (MANUEMP/TOTEMP) * 100). Due to absence of data, industrial composition is limited to employment in the manufacturing and the government sectors. Data on employment in the manufacturing and government sectors were collected from the State and Metropolitan Area Data Book.

4.4.1.1 Hypothesis

The percentage of the non-agricultural labor force employed in the manufacturing sector is expected to have a positive effect on the percentage of the non-agricultural labor force that is unionized.

Union organization of government workers really took off in the 1960s as a result of several factors. Past research has focused on enabling legislation as a crucial factor in the explosion of public sector union membership. There has been little or no attention paid to the characteristics of government work and the possible effect these characteristics may have on union joining behavior.

2. The hypotheses relate to expectancies about union joining behavior at the national level. The results of regional level analysis will be used to further analyze national results. No specific set of hypotheses was formulated for regional level analysis.
To study the possible impact of the characteristics of government work on union membership, data were collected on government employment levels for the period under consideration and the variable PCTGOV (that is percentage of the labor force employed in the government sector) was computed by dividing the total number of nonagricultural workers by the total number of workers employed in the government sector and then multiplying the ensuing ratio by 100; \( PCTGOV = \left(\frac{GOVEMP}{TOTEMP}\right) \times 100 \). Data on employment in the government sector were collected from the State and Metropolitan Area Data Book.

4.4.1.2 Hypothesis

It is expected that public sector employment will have a positive impact on union membership (see 4.4. for further discussion of the impact of legislation on union coverage).

The unemployment rate was used to control for the disparate effect of each state's macro economy on the percentage of its non-agricultural labor force that is unionized. The total employment in a state could also be used to control for the business cycle, however employment was used to compute other variables (PCTMANUF, PCTGOV, PCTBLACK) thus ruling out the inclusion of the variable in the empirical analysis.

Secondly the unemployment rate statistic, (as collected by the Department of Labor), is a more accurate and better
control variable because it is not sensitive to the population size of a state. Total employment on the other hand is sensitive to population, which implies that bigger states are likely to be given more emphasis.

The effect of unemployment on union membership is ambiguous and depends on whether the cross-sectional effects dominate the time series effects or vice-versa. Ashenfelter and Pencavel (1969) argued that as the unemployment rate is falling, the rate of unionization increases. In the cross-section people in labor markets of high unemployment tend to favor unions, as they see the unions as an institution for protecting their jobs. As such the overall effect is determined by which of the two effects dominate.

The 1970s was the decade when the United States really began to start feeling the effect of European and Japanese competition (post 1945) in the international market and also in the domestic market. The intensified competition in conjunction with other macroeconomic factors, such as the price impact of the oil shocks, forced corporations in the United States to pay increasing attention to production costs. This resulted in increased numbers of laid off displaced workers as corporations laid off 'surplus' labor as part of their overall strategy to aggressively reduce costs.

What could be the effect of these layoffs on workers who were used to continuous employment and high wages (high
wages was partially the result of employer strategies that emphasized labor peace in an era after the second world war, where U.S. industry had a monopoly situation in the international economic environment and demand for the products of U.S. corporations was heavy)?

I think that already unionized workers were likely to remain unionized as unemployment increased, because of the perception that the union is powerful enough to help them get their jobs back. Therefore it is likely that the cross-sectional effects of unemployment in the 1970s may have dominated the time series effect. Data for this variable UNRATE were collected from the Handbook of Labor Statistics.

4.4.1.3 Hypothesis

The hypothesized direction of this control variable is ambiguous.

4.4.2 The Labor Climate

The discussion of the labor climate is broken into two parts. Part one is a discussion of the labor climate in the public sector, while the second part looks at the labor climate in the private sector.

The public sector is mostly described by individual state laws that govern union organizing activity in the state. It is implicitly assumed that government is neutral or supportive because laws passed are either antagonistic, neutral, or in support. Climate changes are described mostly
by changes in the legislation that create climate.

The temporal change in the climate in the public sector over time and across states and its effect on the percentage of the non-agricultural labor force that is unionized is assumed to be continuous. While the length of time that the effect dominates cannot be forecasted, it is expected that most of the change in membership pursuant to the employees in the public sector being given the right to organize will occur soon after the public sector collective bargaining legislation is passed.

Empirically, it is difficult to isolate the effect of public sector workers on union membership, largely because the law differs from state to state and enforcement of the law can logically be presumed to vary (Freeman, 1988). In the public sector, on the other hand, trade union activity for all workers is largely controlled by the National Labor Relations Act (as amended), though a good argument can be made to suggest that right-to-work laws may have an effect on the legislation that varies by state.

A second and perhaps equally important reason why it is difficult to empirically measure the impact of the public sector on union membership is the lag between the time a collective bargaining law is passed and when its effect becomes quantifiable for empirical analysis. Related to this is a suspicion that the effect of collective bargaining legislation diminishes with time. The reason for this is the
contention that those individuals who are predisposed toward unionization join at the earliest opportunity (i.e. soon after the enabling legislation is passed). The countervailing argument to this would be the contention that it would always be easier for a public sector worker to join a union because of a lack of managerial resistance. This suggests that the nature of worker-manager relations and type of occupation are what would affect union joining behavior in the public sector.

Statistically there are several ways to assess the effect of public sector legislation. One is to compute the number of months since a state's law was passed, on the argument that there is a lag between passage of the law and its effect and because it is presumed that the effect of the law diminishes. Because of the difficulty in predicting the lag and in determining when the effect of the law starts to diminish, the regression coefficient MONTHS may not be stable, and is not expected to be efficient. The variable was derived by computing the number of months between the date when each state first passed a public sector collective bargaining legislation and 1980.

A second and probably more efficient way to capture the effect of public sector legislation is to add the squared term of the variable MONTHS in the regression equation so as to approximate a non-linear relationship. The variable MONTHSQ was computed by doing precisely that. Even though
this matrix is expected to be more efficient, the regression coefficient derived may still be unstable because of the same reasons discussed above.

A third way to analyze the effect of public sector legislation is to create a dummy variable for the presence of such legislation in each state. Operationalizing this variable in this manner is not expected to result in a more stable or more efficient regression coefficient as creating dummy variables does not correct the underlying problems.

Finally, a more efficient matrix can be estimated by lagging the matrix of the variable MONTHS. The problem with lagging, is lack of precise knowledge as to the actual lag between passage of the law and its impact. Afterall if a researcher lags for enough years any impact can be made to come out the desired way. When this set of variables was included in the regression model, the regression coefficients were highly unstable as expected. As such the variables were not included in the final model.

Variation in the climate for private sector organization has little to do with big dramatic changes in legislation, because legislation has been constant. The only change is variation in enforcement, employer boldness in circumventing legislation, and the presence of restrictive right-to-work laws in some states. Publicly available data exists for the key indicators of the private sector climate, specifically, the number of unfair labor practices, the number of worker
eligible to vote in certification elections as a result of the expressed desire of workers to form or join a union, the extent of union organizing activity and the presence or absence of right-to-work laws.

4.4.2.1 Hypothesis

The presence of public sector collective bargaining legislation is expected to have an upward positive effect on union membership. However, (as discussed above), it may not be possible to precisely capture this effect.

Two variables were computed to analyze the impact of employer resistance on union coverage. In one, RESISTANCE, was computed by dividing the number of unfair labor practices by the number of certification elections (RESISTANCE = NUMULP/ELECTIONS) while in the other RESISTANCE was computed by dividing the number of unfair labor practices by total non-agricultural employment. The variable is a proxy for measuring the impact of managerial resistance to efforts of employees and unions in certifying a union as a legitimate player in an organization.

The extent of union organizing activity on the other hand, was computed by dividing the number of workers eligible to vote in certification elections by the total labor force. (ORGACT = ELIGIBLE/TOTEMP). Data on unfair labor practices, the number of certification elections held, and the number of workers eligible to vote in certification
elections, were collected from the National Labor Relations Board publications.

4.4.2.1 Hypothesis

Following conventional thinking, managerial resistance is expected to have a negative impact on the percentage of the non-agricultural labor force that is unionized. On the other hand, the literature shows conclusively that the intensity, extent, and success of union organizing activities has an impact on the percentage of the non-agricultural labor force that is unionized. This impact of this variable is expected to be positive.

Data on the presence of right-to-work laws were collected from Troy and Sheflin's "Union Sourcebook". The variable RTW (right-to-work laws), is a dummy variable created by coding those states with right-to-work laws as 1 and those without right-to-work laws as 0. This variable was used to analyze the unique effect of the presence of these laws on union membership.

4.4.2.2 Hypothesis

The presence of right to work laws is expected to have a negative impact on the percentage of the non-agricultural that is unionized. These laws are representative of the attitude or the climate within a state with regards to the union question. States with these laws are presumed to be following an overt policy of aggressive anti-unionism. If
the results are in the predicted direction, the implication is that these states are succeeding in this endeavour.

4.4.3 Demographic Characteristics/Individual Preferences

There is no doubt that individual preferences play a role in union joining behavior. Since it is not possible to take psychological testing and survey people, the best thing is to proxy for the effect of individual preferences by analyzing each state's demographic characteristics, subject to sound theoretical and empirical assumptions and findings. It is often stated that minorities (especially blacks) are easier to unionize and there seems to be a consensus of opinion about this. The impact of women on union coverage is more convoluted. Some argue that the increasing number of women in the labor force will make it harder for unions to increase membership as these women are said to be predominately employed in the service sector—a sector labor unions have historically found difficult to organize (see literature review).

I was not able to locate publicly available data on the number of women in the labor force at the state level and for this reason this variable was not included in the analysis. A ratio created by dividing the number of black workers in a state's labor force by the total number of workers employed in that state serves as a proxy for the percentage of a state's employed non-agricultural labor
force that is black.

Since data on on the number of black workers in a state’s labor force is not publicly available the percentage of a state’s labor force that is black was computed by dividing the number of blacks in each state’s population (publicly available) by the number of people employed in the state. Even though this ratio is not as precise as I would want it I think that it is a good approximation of black employment. The variable PCTBLACK measures the effect of employed blacks on union coverage and was computed by dividing the number of blacks in a state’s population by its total employment (PCTBLACK = (NUMBLACK/TOTEMP) * 100).

4.4.3.1 Hypothesis

It has long been argued that blacks show a greater disposition to joining unions. This may be the result of a perception among blacks that labor unions have the power to help protect their economic and perhaps political rights. Thus blacks are expected to have a positive effect on union membership.

A second variable used to proxy for individual preferences was the percentage of high school graduates in each state. Education is related to occupation and as such individuals with high school diplomas are not expected to be as eager to join unions on the assumption that the type of labor market jobs that they assume will be those jobs that
unions have always found difficult to organize. Data for the variable PCTHGRD were collected from the Higher Education Journal and represent the percentage of a state's population that are high school graduates.

4.4.3.2 Hypothesis

Differences that relate to skills, affect preferences for jobs. Since education has an overriding effect on skills, it is hypothesized that higher education leads to a different mindset, which is predisposed to a feeling that unions are not needed for economic protection and for protection of individual job rights. It is expected that the percentage of the population that are at least high school graduates will have a negative impact on the percentage of the non-agricultural labor force that is unionized.

The third indicator used to measure the impact of demographic characteristics and individual preferences was the extent to which a state is urbanized. Workers in highly urbanized states are expected to have a different set of views towards authority. Specifically, I think that the urban experience affects traditional views towards authority in a manner that would make urban dwellers more willing to challenge traditional authority. To the extent that urban dwellers perceive the union as a vehicle for challenging managerial authority they are more likely to become union members. Data for the variable PCTURBAN were collected from
the Census of Population.

4.4.3.3 Hypothesis

It is theorized that because of background, history, and lifestyle, people living in urban areas will have different preferences and views towards unionization as opposed to people living in rural areas. Thus, (ceteris paribus) urbanization is expected to be positively correlated with union membership.

The predicted signs of these variables are:

- PCTMANUF (B1) > 0
- PCTGOV (B2) > 0
- MONTHS (B3) > 0
- UNRATE (B4) ≠ 0
- REARN (B5) > 0
- PCTURBAN (B6) > 0
- PCTBLACK (B7) > 0
- RTWSTATE (B8) < 0
- PCTHGRD (B9) < 0
- ORGACT (B10) > 0
- RESIST (B11) < 0
CHAPTER V
RESULTS

5.1 INTRODUCTION

Empirical analysis was conducted at two levels (national and regional). At each level three decompositions were tested. The first relationship is an economic function for the effect of the macro economy on union joining behavior. It relates sectoral employment and the incidence of unemployment to union coverage. Manufacturing employment is

As expected the coefficients of public sector legislation variables were unstable. This was manifested by the fact that the coefficients (MONTHS, MONTHSQ, and the dummy variable) were all in the opposite direction and that after lagging for two years the coefficient was weakly positive but not significant. As such none of these matrixes was included in the final regression equation. Secondly the variable RESISTANCE proved to be unreliable. The most plausible reason for this probably lies in the nature of the unfair labor practice (ULP) data. The NLRB does not differentiate between ULP's filed by management from ULP's filed by labor. While it is often assumed that most ULP's are filed by management, a more precise and cleaner estimator of managerial resistance would be computed if unfair labor practice cases is dichotomized. The coefficients of the variable when computed by dividing unfair labor practice cases by representation elections were better than those derived when unfair labor practice cases was divided by total employment. The matrix entered into the final analysis was the former and the coefficients are presented but will not be discussed.
assumed to have a positive effect on union coverage. However the direction of the effect may be reversed in an environment characterized by declining manufacturing employment.

Government employment is hypothesized to have a positive effect on union growth. This effect is assumed to be dependent on the characteristics of government work and the absence of an adversarial labor-management climate in the public sector.

The second decomposition links union coverage to legislation and interest actions. It treats legislation, union organizing activity and managerial resistance to unionization as influences on union labor force coverage. Right-to-work laws assumed to raise the cost of union organizing while reducing the cost of management resistance. Union organizing (which is a function of management resistance, the attitudes of workers, and the financial resources of organized labor) can result in a net increase, decrease, or may have no effect on membership figures. Finally managerial resistance (which is affected by the composition of the NLRB, and is often characterized by the use of consultants) as the potential to hinder the impact of organizing activities.

The third relationship in my analysis links demographic characteristics and individual attainment to union coverage. Three specific relationships were analyzed. One, was the
relationship between black workers and union coverage. This relationship is dependent on unemployment and location. Rural southern blacks seem to have less chance of unionization compared to urban blacks. Two, was the relationship between education and union membership. This relationship is dependent on the enforcement of legislation and individual choice. Thirdly, the linkage between urbanization and unionization was studied. The type of industry, occupational structure, and legislation - the presence or absence of a public sector collective bargaining law, and right-to-work laws - was theorized to mediate the relationship between urbanization and union coverage.

There are several important features of this model. One is the inclusion of private and public sector variables. It is theorized that analyzing at this level will be more informative than conducting analysis only at the national level. Overall union coverage is assumed to be dependent on coverage in each sector.

A second important feature is more conceptual than theoretical. It is the aggregation of data at the state level. This allows the capturing of the important variations at an even more finite level than national data. Secondly it allows aggregation of observations into regions. Regional results are expected to more finely explain variations in union coverage. It is theorized that this will improve the robustness of the results.
The results are presented in three steps. In the first step results from aggregation at the national level are presented and analyzed. In the second step results from aggregation at the regional level are presented, and in the last step the results for both levels (national and regional) are presented in the same panel and discussed. This step allows the discussion of the results as a comprehensive whole.

5.2 National Level Results

Table 3 presents the regression statistics for observations pooled across states and across time. A discussion of the results is presented after the table.

2. Means for the dependent and key independent variables are presented in appendix 3. These data is presented for the benefit of the reader and will not be discussed in detail.
<table>
<thead>
<tr>
<th>Determinants of Union Coverage in the United States 1970-1980</th>
</tr>
</thead>
<tbody>
<tr>
<td>PCTMANUF          -0.13      -0.14      -0.20</td>
</tr>
<tr>
<td>PCTGOV            -0.81      -0.38      -0.58</td>
</tr>
<tr>
<td>UNRATE            0.53       0.11       9.29***</td>
</tr>
<tr>
<td>RESIST            -0.10      -0.21      -0.13</td>
</tr>
<tr>
<td>ORGACT            56.89      0.19       2.26***</td>
</tr>
<tr>
<td>PCTBLACK          -0.12      -0.14      -3.39***</td>
</tr>
<tr>
<td>PCTHIGH           -0.13      -0.20      -7.59***</td>
</tr>
<tr>
<td>PCTURB            0.14       0.24       4.78***</td>
</tr>
<tr>
<td>RTWSTATE          -9.09      -0.50      -10.18***</td>
</tr>
<tr>
<td>CONSTANT          21.54      0.00       3.81</td>
</tr>
</tbody>
</table>

BUSE R-SQUARE       .879
CONSTANT RHO        .868
DF                  540

* -- Significant at the .10 level, one-tailed test  
** -- Significant at the .05 level, one-tailed test 
*** -- Significant at the .01 Level, one-tailed test
The results above indicate that, contrary to theoretical expectations, manufacturing employment did not have a significant positive impact on union coverage in the 1970s. This finding was only mildly surprising as several researchers had found a similar relationship for the decade (Freeman, 1988; Reder, 1988; Roomkin and Juris, 1980; Prosten, 1978).

Likewise the coefficient of the public sector employment variable was not significantly positive. This result is in line with those empirical works that have suggested that union coverage in the public sector entered a downward trend sometimes in the mid 1970s (Freeman 1986; Reder, 1988). This result could have been examined further if the other indicators of public sector legislation had been reliable. As discussed earlier, the effect of public sector collective bargaining laws on union coverage is tenuous, because the effects are subject to time lags and diminishing returns over time. Finally, contrary to expectations, higher percentages of blacks in the non-agricultural labor force had a negative effect (which was also strongly significant) on union growth in the 1970s. This is contrary to expectations and difficult to explain. It is hard to understand why states with higher proportions of blacks should also be less highly unionized.

All other effects were in the predicted direction and statistically significant. The unemployment rate showed that
a 10 percent increase in unemployment, was associated with a 5.3 percent increase in union coverage. The direction of the coefficient suggests that the positive effects of unemployment from the cross-section outweighs any negative effects of unemployment across the business cycle. Secondly, the results indicate that a 10 percent change in the extent of urbanization will result in a 1.4 percent increase in the extent of union coverage. The finding supports the urbanization thesis that highly urbanized states are more highly unionized.

Thirdly, presence of right-to-work laws had an even greater impact on the percentage of the labor force that is unionized. The unstandardized coefficient indicates that if a state is a right-to-work state, the rate of unionization will be 9 percent less than if it is not right-to-work. It is impossible to determine from the results whether it is the mere presence of right-to-work laws that resulted in the negative impact or whether it is a function of employee attitudes and taste. However the result presents a strong implication that the taste/preferences argument is weakened and that it is likely that right-to-work legislation in and of itself has a strong impact.

Fourthly, the variable PCTHIGH, showed that a 10 percent increase in the percentage of a state's population with high school diplomas was associated with an 1.3 percent decline in the percentage of the non-agricultural labor force that
was organized. This coefficient implies that increasing the number of years of education completed, decreases the probability that those individuals will join labor unions. This is probably a function of the historically lower rate of unionization of white collar jobs.

The effect of union organizing on the percentage of the non-agricultural labor force that was unionized was positive. Thus as union organizing increases (as proxied by the number of certification elections per employed worker), the percentage unionized in the state increased.

Not all of the independent variables were measured in the same units (for example, union organizing activity and employer resistance are ratios, some variables are expressed in percentage terms, and finally one variable simply shows the presence or absence of right-to-work laws.

Standardized coefficients can provide a rough estimate of the relative importance of variables whose measures are not the same. Examining the standardized coefficients, we find that right-to-work laws had by far the most important impact on unionization of the six statistically significant variables. Urbanization, education, and organizing activity were next in importance, while percent black and percent unemployed were last.
5.3 Southern Region

In this section results of aggregation into the southern region is presented. Under BLS classification the following states compose the southern region: Delaware, Maryland, Virginia, West Virginia, North Carolina, South Carolina, Georgia, Florida, Kentucky, Tennessee, Alabama, Mississippi, Arkansas, Louisiana, Oklahoma, and Texas.
### Table 4

**Determinants of Union Coverage in the Southern Region, 1970-1980**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PCTMANUF</td>
<td>-0.36</td>
<td>-0.34</td>
<td>-6.49***</td>
</tr>
<tr>
<td>PCTGOV</td>
<td>-0.86</td>
<td>-0.26</td>
<td>-0.77</td>
</tr>
<tr>
<td>UNRATE</td>
<td>0.31</td>
<td>0.63</td>
<td>2.53***</td>
</tr>
<tr>
<td>RESIST</td>
<td>-0.25</td>
<td>-0.55</td>
<td>-1.98**</td>
</tr>
<tr>
<td>ORGACT</td>
<td>17.74</td>
<td>0.81</td>
<td>0.33</td>
</tr>
<tr>
<td>PCTBLACK</td>
<td>-0.17</td>
<td>-0.20</td>
<td>-3.78***</td>
</tr>
<tr>
<td>PCTHIGH</td>
<td>-0.16</td>
<td>-0.24</td>
<td>-7.60***</td>
</tr>
<tr>
<td>PCTURB</td>
<td>-0.27</td>
<td>-0.44</td>
<td>-10.81***</td>
</tr>
<tr>
<td>RTWSTATE</td>
<td>-11.19</td>
<td>-0.66</td>
<td>-12.38***</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>63.23</td>
<td>0.00</td>
<td>17.35</td>
</tr>
</tbody>
</table>

BUSE R-SQUARE  .932  
CONSTANT RHO  .782  
DF  166  

* -- Significant at the .10 level, one-tailed test  
** -- Significant at the .05 level, one-tailed test  
*** -- Significant at the .01 level, one-tailed test
The T-ratios indicate that manufacturing employment, blacks, educational attainment, urbanization, and right-to-work laws all had negative, statistically significant impacts on union coverage, while the impact of the characteristics of government employment, though negative, was not statistically significant. The other variables were positively correlated with unionism. However only the incidence of unemployment was statistically significant.

The estimated coefficients indicate that a 10 percent increase in manufacturing employment was associated with a 3.6 percent decline in union coverage. The effect is probably a reflection of the strong non-union sector in manufacturing in the south. In the southern region, states which were more highly industrialized (i.e. with higher proportions of workers in manufacturing), were also the least unionized.

Two, a 10 percent increase in the number of government employees had a 8.6 percent decrease in the number of union members. Three, unemployment had a positive effect on unionization. Specifically, a 10 percent increase in the incidence of unemployment had a 3.1 percent increase on union membership. Union organizing activity on the other hand had a strong positive impact.

The hard to explain negative relationship between black population and unionization derives from the southern region. In the south the proportion of employed blacks was
associated with a 1.7 percent decrease in union coverage. The unexpected negative sign for blacks was stronger in the south than in the country as a whole. The coefficient for blacks was significantly positive in the midwest and the northeast and insignificant in the west. Empirically, the strange southern result may be a function of the occupational composition of employed blacks, and the huge numbers of southern rural (and nonunionized) blacks.

As expected, higher education had a negative effect. A 10 percent increase in the number of high school graduates was associated with a 1.6 percentage point decline in union membership. Surprisingly, urbanization was associated with 2.7 less unionization. Apparently, what union members there are in the south are disproportionately in the less urbanized and industrialized states.

Secondly, even within the southern region, the presence of right-to-work laws is associated with less unionization in a state. The right-to-work coefficient is the same within the south as it is within the country as a whole.
5.4 Northeastern Region

Under BLS classification the following states comprise the northeast: Maine, New Hampshire, Vermont, Massachusetts, Rhode Island, Connecticut, New York, New Jersey, and Pennsylvania. None of these states has right-to-work legislation, thus the variable was omitted from the analysis for this region.
**Table 5**

Determinants of Union Coverage in the Northeastern Region 1970-1980

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PCTMANUF</td>
<td>0.27</td>
<td>0.14</td>
<td>1.90**</td>
</tr>
<tr>
<td>PCTGOV</td>
<td>-0.39</td>
<td>-0.10</td>
<td>-2.15**</td>
</tr>
<tr>
<td>UNRATE</td>
<td>0.61</td>
<td>0.13</td>
<td>3.82***</td>
</tr>
<tr>
<td>RESIST</td>
<td>3.33</td>
<td>0.59</td>
<td>8.12***</td>
</tr>
<tr>
<td>ORGACT</td>
<td>354.98</td>
<td>0.12</td>
<td>5.05***</td>
</tr>
<tr>
<td>PCTBLACK</td>
<td>1.23</td>
<td>0.75</td>
<td>10.31***</td>
</tr>
<tr>
<td>PCTHIGH</td>
<td>-0.37</td>
<td>-0.55</td>
<td>-9.59***</td>
</tr>
<tr>
<td>PCTURB</td>
<td>-0.15</td>
<td>-0.38</td>
<td>-3.95***</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>29.53</td>
<td>0.00</td>
<td>3.96</td>
</tr>
</tbody>
</table>

BUSE R-SQUARE 0.998  
CONSTANT RHO 0.00  
DF 99

1 — No state in this region had a right-to-work law in the 1970s.
* — Significant at the .10 level, one-tailed test
** — Significant at the .05 level, one-tailed test
*** — Significant at the .01 level, one-tailed test
An examination of the T-ratios shows that three variables had significant negative impacts on union coverage while the other five variables had significant positive impacts. Manufacturing employment had a positive effect on unionization in this region. The estimated coefficients suggest that, one, a 10 percent increase in manufacturing employment was associated with a 2.7 percent increase in union membership. This effect (though relatively modest) was quite significant as reflected in the T-ratio. Two, a 10 percent increase in the incidence of unemployment had a 1.3 percent increase on union membership rates, implying that the cross-sectional impacts outweighed the time series effects of unemployment.

Three, union organizing activity had a positive impact on the union differential. The result also indicates that managerial resistance of these organizing campaigns were largely unsuccessful. In the northeast, a more highly concentrated black population is associated with a higher rate of unionization. A 1 percent increase in black employment was associated with a 1.23 percent increase in union coverage. However as in the south, more urbanized states are also less unionized, which is a surprising result. Perhaps the nonunion sector is also a sector disproportionately being located in the more urbanized states of the northeast. Finally, as expected, a 10 percent increase in the number of years of schooling completed was
associated with a 3.7 percent decrease in the percentage of the non-agricultural labor force unionized.

Overall, the results suggests that manufacturing employment, blacks and labor union organizing activity were perhaps the most important determinants of union density in the 1970s in the northeast. Since none of the states in this region were right-to-work states (in the 1970s), one is left wondering what the effect of such a law would be if it was legislated.

5.5 Midwestern Region

The midwestern region is a very interesting region. It is made up of highly industrial and unionized states such as Ohio, Michigan, and Illinois and lowly industrial and union states such as North and South Dakota. There is no doubt that the impact of the economic ills in the 1970s was heavily felt in those highly industrialized midwestern states. This adverse effect on manufacturing employment (for example) has been well documented. The states that comprise the midwestern region are as follows (BLS classification): Ohio, Indiana, Illinois, Michigan, Wisconsin, Minnesota, Iowa, Missouri, North Dakota, South Dakota, Nebraska, Kansas.
### Table 6

**Determinants of Union Coverage in the Midwestern Region 1970-1980**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PCTMANUF</td>
<td>-0.75</td>
<td>-0.75</td>
</tr>
<tr>
<td>PCTGOV</td>
<td>-1.50</td>
<td>-0.68</td>
</tr>
<tr>
<td>UNRATE</td>
<td>1.17</td>
<td>0.23</td>
</tr>
<tr>
<td>RESIST</td>
<td>-0.48</td>
<td>-0.10</td>
</tr>
<tr>
<td>ORGACT</td>
<td>-15.62</td>
<td>-0.41</td>
</tr>
<tr>
<td>PCTBLACK</td>
<td>0.59</td>
<td>0.30</td>
</tr>
<tr>
<td>PCTHIGH</td>
<td>-0.21</td>
<td>-0.27</td>
</tr>
<tr>
<td>PCTURB</td>
<td>-0.25</td>
<td>-0.29</td>
</tr>
<tr>
<td>RTWSTATE</td>
<td>-5.82</td>
<td>-0.32</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>77.06</td>
<td>0.00</td>
</tr>
</tbody>
</table>

**BUSE R-SQUARE** 0.999  
**CONSTANT RHO** 0.685  
**DF** 122

* -- Significant at the .10 level, one-tailed test  
** -- Significant at the .05 level, one-tailed test  
*** -- Significant at the .01 level, one-tailed test
As expected the results reflect the adverse impact of the economic environment on midwestern manufacturing employment. This effect is compounded by the presence of right-to-work laws in several midwestern states and the intense managerial resistance to unions especially in the manufacturing sector (starting somewhere in the mid 1970s).

Of the 10 variables included in the analysis, only two (employed blacks, and unemployment) had positive effects on union density. The effect of the two variables were also significant. Within the group of variables with negative signs, right-to-work laws and educational attainment had the largest impact.

The unstandardized coefficients further illustrate the picture. These coefficients indicate that: one, a 10 percent increase in manufacturing employment was associated with a 7.5 percent decline in union density. This means that within the midwest, the states with the largest percentage of workers in manufacturing are also the least unionized. This is a result which is somewhat hard to understand. This could possibly be a function of the net loss in manufacturing jobs in this region during the 1970s. Two, a 1 percent increase in government employment was associated with a 1.5 percent decline in the incidence of unionism. This suggests that employment had little or no impact on overall union coverage in the region.
Three, a 1 percent increase in the incidence of unemployment was linked with a 1.17 percent increase in union membership. This result suggests that workers in the midwest turned to labor unions to protect their jobs, as the impact of managerial strategies to reverse the effect of the economic environment on manufacturing took its impact on labor.

Four, union organizing did not have any significant positive impact on union coverage. Five, a 10 percent increase in the number of blacks employed had a relatively modest 5.9 percent increase on union coverage. Six, the results suggest that urban areas had negative impacts on union density. A 10 percent increase in urbanization was associated with a 2.5 percent decrease in union density. This is perhaps indicative of the net loss of union jobs in urban midwestern states in the 1970s. Seven, a 10 percent increase in the number of high school graduates resulted in a 2.1 percent decline in union coverage and finally, a 1 percent increase in the number of states with right-to-work laws had a 5.8 percent decrease on union density.

Overall it is clear that declining manufacturing employment, the absence of a comprehensive public sector collective bargaining laws in the key (employment) state (Ohio) in the 1970s, intense managerial resistance to unionization, and the high proportion of high school graduates in the midwest had a very serious deleterious
effect on union fortunes in this region.

5.6 Western region

Under the BLS classification the following states are classified into the western region: Montana, Idaho, Wyoming, Colorado, New Mexico, Arizona, Utah, Nevada, Washington, Oregon, California, Alaska, Hawaii.
### Table 7

**Determinants of Union Coverage in the Western Region 1970-1980**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PCTMANUF</td>
<td>-0.40</td>
<td>-0.30</td>
<td>-2.55***</td>
</tr>
<tr>
<td>PCTGOV</td>
<td>-0.50</td>
<td>-0.28</td>
<td>-3.55***</td>
</tr>
<tr>
<td>UNRATE</td>
<td>1.77</td>
<td>0.43</td>
<td>4.57***</td>
</tr>
<tr>
<td>RESIST</td>
<td>0.18</td>
<td>0.42</td>
<td>0.58</td>
</tr>
<tr>
<td>ORGACT</td>
<td>335.36</td>
<td>0.10</td>
<td>1.68**</td>
</tr>
<tr>
<td>PCTBLACK</td>
<td>-0.14</td>
<td>-0.42</td>
<td>-0.36</td>
</tr>
<tr>
<td>PCTHIGH</td>
<td>-0.17</td>
<td>-0.28</td>
<td>-4.38***</td>
</tr>
<tr>
<td>PCTURB</td>
<td>0.13</td>
<td>0.21</td>
<td>1.74**</td>
</tr>
<tr>
<td>RTWSTATE</td>
<td>-9.95</td>
<td>-0.57</td>
<td>-4.64***</td>
</tr>
<tr>
<td>CONSTANT</td>
<td>33.09</td>
<td>0.00</td>
<td>5.17</td>
</tr>
</tbody>
</table>

**BUSE R-SQUARE** 0.887  
**CONSTANT RHO** 0.573  
**DF** 133

* — Significant at the .10 level, one-tailed test  
** — Significant at the .05 level, one-tailed test  
*** — Significant at the .01 level, one-tailed test
In the western region, sectoral employment had significant negative effects on union coverage while the incidence of unemployment had a significant positive impact. Other variables whose direction were positive were union organizing activity, and urbanization. The signs for employed blacks, high school graduates, and right-to-work laws were all negative.

The unstandardized coefficients reveal that a 10 percent increase in manufacturing employment was associated with a 4.0 percent decline in the incidence of unionization in this region. Also a 10 percent increase in government employment was associated with a 5.0 percent decrease in union coverage. A 1 percent increase in the level of unemployment resulted in a 1.7 percent increase in union density, while a union organizing activity had significant positive impact on union membership in this region. As expected educational attainment was negatively correlated with unionization. A 10 percent increase in the number of high school graduates was associated with a 1.7 percent decline in the percentage of the non-agricultural labor force that were union members.

Western urban states accounted for a positive increase in union membership, as a 10 percent increase in areas urbanized is linked with a 1.3 percent increase in union coverage. This result is consistent with the fact that California, one of the states that comprise this region (and also the most highly urbanized state in the United States),
also has a relatively high percentage of its workforce unionized. Finally, the impact of right-to-work laws was negative as a 10 percent increase in the number of states with these laws was associated with a 5.7 percent decrease in union density. Overall, the results suggests that union organizing activity were largely successful in western states. The urbanization variable confirms the suspicion that most union members are concentrated in the more relatively urbanized western states such as California and Washington.

5.7 Discussion

The results of analysis at the regional level (as presented above) help to clarify the results obtained at the national level. In this section a discussion of the results, focusing on the inconsistencies among regions and making comparisons back to the national data is presented. To facilitate direct comparison and discussion of national and regional results, the regression coefficients are presented in table 8.
### Table 8

Matrix of Regression Coefficients

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1. The coefficients without parenthesis are standardized coefficients.
2. The coefficients in parenthesis are T-ratios

a -- The U.S.
b -- The Southern Region
c -- The Northeastern Region
d -- The Midwestern Region
e -- The Western Region
A thorough study of the data (above) indicates that as expected, results from analysis at the regional level does inform the results derived from empirical analysis at the national level. One, the theoretically surprising result of an overall negative impact of manufacturing employment is explained by the significant negative effect of the south, midwestern, and western regions. This suggests that the union avoidance strategy of regions other than the midwest is producing the desired results.

In the midwest, the decline in union representation of manufacturing jobs is perhaps testimony to the devastating effect of macro economic factors on the manufacturing industry, especially after the middle years of the decade. In the west this is probably a reflection of the general low level of manufacturing activity, and an overall anti-union animus. Therefore it can reasonably be concluded that for this variable, the time series effect dominates the cross-section effect.

Two, the effect of public sector employment is negative or insignificant in all regions. This suggests that the characteristics of jobs in the government are not in and of themselves conducive to unionization. Public sector laws serve the function of placing public sector workers on the same playing field as private sector workers as far as unionization legislation is concerned. It is difficult to conclude from the results that unions have failed to take
advantage of public sector legislation, unless one is able to statistically capture the effect of a disparate set of laws.

Three, unemployment had a positive effect on unionization throughout the country. This effect was strongest in the midwest, perhaps reflecting the fact that the industrial midwestern states are the most highly unionized. Overall the cross-sectional effect of unemployment seems to outweigh the time series effects. This finding suggests that as recent as the 1970s workers still viewed labor unions as an effective mechanism for protecting their physical jobs and their rights on the job. The same reasoning holds for the earnings variable. This variable was positive and significant in every region. This suggests that the union wage effect was a significant barometer of union joining behavior.

Four, overall union organizing activity had a positive impact on union coverage. This result bodes well for future union organizing activity in that it supports the thesis that union organizing can play a positive role in increasing union coverage of the labor force. Five, while employed blacks in the midwest and northeast had a significant and positive effect on union coverage, the overall impact of blacks on union coverage was negative, due to the negative effect of southern blacks on union membership. There are two possibilities for explaining the union joining behavior of
southern blacks: that the anti union climate in the south does not allow black sentiments to be converted to unionization or that attitudes are just less pro-union in the south, even for blacks.

Six, as expected educational attainment had a negative effect on union density. This is probably a reflection of the occupational effect of education, whereby increasingly higher education is associated with hard to organize white collar jobs. Seven, though the overall impact of urbanization was positive, the effect of urbanization in the south, midwest, and northeast were all strongly negative. This result strongly suggests that it is not urbanization per se that determines union growth. It is likely that it is the industrial composition and the type of jobs that determines success in organizing urban workers. Finally, the results indicate that right-to-work pose the single most devastating obstacle to unionization. These laws are theorized to be a function of ideology and serve as beacons of anti-union sentiments.

5.8 Conclusion

I believe that the analysis presented in this dissertation substantially improves our understanding of trade unionism in the United States. The national and regional evidence presented shed useful light on the phenomenon of union membership. Although it was not possible
to include all factors that potentially affect union coverage in the analysis, the available evidence presents a powerful and compelling explanation of unionization in the 1970s. As such, the results are essentially tentative and will be built upon in future research efforts.

It is suggested that future studies should explore the effect of sectoral employment further, by including data on employment in the increasingly important service sector. Secondly the impact of the occupational mix could be usefully explored. Thirdly a better measure of managerial resistance could be computed if data exists on the number of unfair labor practice cases filed by management. As the data stands, there is no way to differentiate between cases filed by labor and those filed by management. Finally a more precise analysis of the effect of public sector workers can only be determined if it is somehow possible to explore the effect of public sector collective bargaining laws on union coverage.
Bibliography


Appendix A
Research Design

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1. Structure of the economy

2. Labor Climate

3. Demographic/individual preferences

1. The research design is based on the premise that the percentage of the non-agricultural labor force unionized (data collected at the state level), is a function of the state of the economy, the prevailing labor climate, and demographic/individual preferences.
Appendix B
Independent Variables

Measures of the State of the Economy
Percentage of the labor force employed in the manufacturing sector
Percentage of the labor force employed in the government sector
Unemployment rate

Measures of Labor Climate
Managerial Resistance to union organizing activity.
Union organizing activity.
Presence or absence of right to work laws

Demographic/Individual Preferences
Percent of the labor force that is black
Percentage of population living in urban areas
Percent of labor force that are high school graduates
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Descriptive Statistics for Regression Variables, 1970-1980

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