ABSTRACT

Federal Employment Concentration and Regional Process in Nonmetropolitan America

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Nonmetropolitan America has undergone significant changes over the past quarter of a century. From the population turnaround in the 1970s, to population decline in the 1980s, to population rebound in the 1990s, nonmetro counties have seen fluctuations in population and economic growth. Historically, nonmetropolitan America has been dependent on single sustenance activities such as farming, mining, and manufacturing which increases the instability of these counties. Less diversified than metropolitan areas, nonmetro areas have more strongly felt the effects of deindustrialization and globalization. While population change and economic growth and decline related to farming, mining, manufacturing, and increased service sector employment has been addressed both in metropolitan and nonmetropolitan areas, less research has addressed the role of government in regional processes in nonmetropolitan communities. This study intends to contribute to the study of regional processes in nonmetropolitan America by looking at the effects of public sustenance structures (such as federal employment concentration) on measures of economic growth and development in nonmetro counties between 1990 and 2000.

Federal Employment Concentration and Regional Process in Nonmetropolitan America

by

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A Dissertation

Approved by the Department of Sociology

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Submitted to the Graduate Faculty of
Baylor University in Partial Fulfillment of the
Requirements for the Degree
of
Doctor of Philosophy

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August 2008

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ACKNOWLEDGMENTS

I sincerely thank the numerous people that have given towards the completion of this dissertation. First I extend my appreciation to the entire faculty in the Sociology program at Baylor for their support in this process and for years of time and encouragement working with me to complete my goals. Specifically, I thank Dr. Mencken for the countless hours he has spent working with me during the dissertation process as well as numerous other projects throughout my time at Baylor. I appreciate his consistent encouragement and direction towards completing this process.

I also want to acknowledge my colleagues Kathy Krey and Rusty Parker with whom I have had many classes and spent many hours pouring over work. They have been there for everything from statistical questions to life changing moments. In particular, Kathy has been inspirational in the dissertation process. As my accountability partner in this process, I thank Kathy for tons of encouragement and exceptional dissertation advice.

I thank my parents for constant support through my academic career and for instilling a love for learning in me at an early age. I also extend thanks to my number one, my husband, and his family who entered my life in the middle of this process offering instant support and interest in my academic studies. Thank you all for hours of sacrifice for me to accomplish this goal.

CHAPTER ONE

Introduction and Literature Review

Introduction

For a significant length of time, nonmetropolitan economies were dependent upon agriculture, natural resources, such as timber, coal, and oil, and low skill manufacturing jobs (Falk et al., 2003). Changes in natural resource industries and globalization have stripped nonmetropolitan America of many former economic opportunities and eliminated many jobs. Historically, low-skill, low wage nonmetropolitan manufacturing was a staple by which nonmetropolitan economies competed with metropolitan economies. However, globalization has moved many of these jobs to foreign labor markets, where wages are considerably lower.

The net impact on nonmetropolitan America has been accelerated population movement of the most skilled workers to urban areas in search of opportunities. In their place has emerged dependent (retired and disabled persons) and seasonal residents. The jobs that have replaced traditional industries/sustenance functions include back-office producer service sector jobs, low skill service sector jobs (such as call centers) and seasonal tourist work. Furthermore, the smokestack chasing seen in the Fordist era has been replaced by facilities chasing in more recent years. That is, local nonmetropolitan economies are chasing state and federal facilities (prisons, government agency branch facilities, etc.) for economic opportunities.

Federal facilities, local government employment, and government investment and purchasing all represent a secondary niche typically ignored in ecological research. Do

places with an expanded secondary, public sector niche perform better than places that lack such access? In this research I examine the effects of state and federal employment and presence and how it has affected economic growth and development in nonmetropolitan counties during the 1990s.

The layout of the research is as follows. The first chapter includes the literature review, which is divided into three sections. In section one, I present the socioeconomic history of nonmetropolitan America, with a focus on the post-Fordist era (i.e. post 1973). This section identifies the important economic forces that affected nonmetropolitan economies (manufacturing change, migration, service sector emergence). Section two of the literature review presents the theoretical framework which informs the analysis. In this section I review the theories and the core concepts that I use to build hypotheses. The third section of the literature review is an examination of existing empirical research on the core concepts. Since this research focuses on the effects of federal presence in nonmetropolitan economies, this section of the literature review focuses on the impact of federal spending and federal employment facilities. The chapter concludes with the presentation of three formal hypotheses.

The second chapter presents the data, methods, and measurement section. Chapter Three presents the results of the methods and analyses detailed in Chapter Two. Chapter Four includes a discussion and conclusion.

Literature Review

Section 1. Recent Trends in Nonmetropolitan Economic Growth and Development

    Population Changes. Some of the most essential factors that drive socioeconomic performance are population changes- specifically net gains or losses due to migration. The metropolitan-nonmetropolitan relationship has gone through several transitions in the past four decades. During the nonmetropolitan turnaround in the late 1960s and early 1970s nonmetropolitan areas experienced widespread growth, reversing the long time trend of nonmetropolitan to metropolitan migration.

    In the 1960s nonmetropolitan counties saw a net out migration of 2.8 million, but this was reversed in the 1970s with 4 million entering nonmetropolitan areas (Albrecht, 1993). The population turnaround in the 1970s, however, was not universal. Nonmetropolitan areas that experienced increased immigration were those with larger populations, more diverse economies, "recreation counties" and those near metropolitan areas. Those that declined were mostly major farming areas (Albrecht, 1993).

    The 1980s marked a "turnaround reversal" where metropolitan growth began to dominate nonmetropolitan growth once again (Johnson & Fuguitt, 2000). In a study of population trends, Albrecht (1993) found that during the 1980s, 84 percent of nonmetropolitan counties sampled experienced total population declines. He also found that the most important positive relationship with population growth was the ability of a county to attract retirement migrants. In contrast, not only did metropolitan areas experience population growth, they also experienced higher income and better paying jobs during the 1980s.

However, in the 1990s, the "rural rebound" shifted population trends back to nonmetropolitan growth, although smaller than in the 1970s (Johnson & Beale, 1998; Johnson & Fuguitt, 2000). This growth, however, was not geographically uniform (Vias, 2001). For example, 1990-1995 data show widespread growth similar to that of the 1970s in the nonmetropolitan west (Nelson & Beyers, 1998). In addition, Vias (2001) found significant differences in migration based on economic structure, diversity and service-type of the county.

Recent technological advances, especially in telecommunications, are one contributor to nonmetropolitan growth, allowing people to live further away from the actual location of their employment (Johnson & Beale, 1998; Johnson & Fuguitt, 2000; Nelson & Beyer, 1998). This is important for nonmetropolitan areas because people are moving to where they want to live, not where they work. According to Brown et al. (1997) Americans would rather live and work in low-density settings, which is now easier due to better transportation and communication. Therefore, people may be better capable of working from nonmetropolitan areas than in the past decades. For nonmetropolitan areas adjacent to metropolitan areas, this would mean that although residents may earn their income from an urban center, they are spending some of it in a nonmetropolitan area.

Johnson and Fuguitt (2000) examined counties fulfilling the role of different niches such as commuting counties, college counties, and recreation counties. They found some evidence of a differentiation of migration patterns by type. For example, commuter counties were especially important in the turnaround and rebound of the 1970s and 1990s because of the "natural spillover" from metropolitan areas. Johnson and Beale

(1998) report that 85 percent of nonmetropolitan counties adjacent to urban areas saw population spillover gains in the early 1990s. Counties that remained heavily dependent on farming and mining benefited the least from the rebound of the 1990s (Johnson & Beale, 1998). Specialized appeal of counties, however, does not cancel out the fairly consistent age pattern of migration that has endured through the decades.

Who is moving in and out over the decades? Johnson and Fuguitt (2000) examined nonmetropolitan migration patterns and found an overall pattern of young people moving out (except for college areas). Commuter counties attract people in their thirties with small children, and recreational areas attract older adults representing an appeal of certain types of counties to specific age groups or life cycle stages (Johnson & Fuguitt, 2000). One challenge of increasing importance to nonmetropolitan areas is keeping the educated, working age population. Huang, Orazem and Wohlgemuth (2002) indicate that while human capital (measured through education) raises nonmetropolitan incomes, it raises the income a person can earn in an urban market even more leading to a "brain drain" in nonmetropolitan areas.

Instead of focusing on who is migrating, some scholars have realized the importance of looking at who does not migrate. Research focusing on what ties people to a town and makes them less likely to leave found that small business and small manufacturers, along with other variables which affect civic engagement, play an important role in tying people into their community, making them less likely to leave (Irwin & Tolbert, 1997; Irwin, Tolbert & Lyson, 1999; Tolbert, Lyson & Irwin, 1998). Small business may also help create a more diverse labor market, which is important to the change in nonmetropolitan population growth (Huang, Orazem & Wahlgemuth,

2002). In an analysis of the socioeconomic gap, it is important to understand population

trends because human capital is essential to socioeconomic development and often

directly linked to economic activity.

Manufacturing concentration. Manufacturing has been a major player in

economic growth in the United States since the industrial revolution. Post WWII marked

a time of government intervention and promotion of major domestic corporations as well

as the ushering in of the Fordist model of mass production. American firms thrived

during this era, experiencing a great deal of economic growth (Kodras, 1997).

In the 1970s, America began to see shifts in manufacturing jobs. Decentralization

of manufacturing in the 1970s drew firms to the south and west, where labor, tax rates,

energy prices, and pro-business climates favored large manufacturing firms (Kodras,

1997). This transformation acted as a catalyst for economic growth in the South and

West, both in population and economic activity, while at the same time it changed the

poverty structure of the entire United States through massive layoffs in the rustbelt.

However, during the late 1980s and early 1990s, some of these same counties began to

lose their manufacturing jobs to cheaper labor markets overseas (Mencken, 2004). In the

1980s, manufacturers responded to the growing competition of cheap labor by moving

their facilities offshore, making it obvious that the competition of the global economy

would play a part in manufacturing location and production here in the United States

(Grant & Wallace, 1994). The restructuring of the manufacturing industry in the United

States continues to change. The 1980s began a period of increased globalization and

outsourcing that continues today.

Many of the counties that absorbed the redistribution of manufacturing plants within the US during the 1970s were nonmetropolitan counties causing increases in population as well as economic growth. Yet due to lack of economic diversity in nonmetropolitan areas, it is estimated that another redistribution of manufacturing jobs overseas had a negative impact on nonmetropolitan communities. Mencken and Singelmann (1998) hypothesized that manufacturing concentration would have a negative effect on growth in nonmetropolitan areas during the 1980s because manufacturers were shifting production overseas. They found that while not negative, the effect of manufacturing on growth in nonmetropolitan areas was diminished. Research has shown that there were large employment losses in the manufacturing industry during the 1980s. This especially hit areas, like the Midwest, where a disproportionate amount of employment can be accounted for by manufacturing (Bound & Holzer, 2000). The overall effect of manufacturing firms on economic growth in the 1980s found by Mencken & Singelmann, however, was still positive. Similarly, Wojan (1998) acknowledged that manufacturing was still a major source of employment and income in nonmetropolitan areas. But the concentration of nonmetropolitan employment in manufacturing led to declining economic opportunities, as nonmetropolitan labor markets were increasingly integrated into the global economy where they had to compete with cheap, overseas workers.

Chevan and Stokes (2000) review two contrasting views of deindustrialization. One is that industrial restructuring or "deindustrialization" is the single most powerful cause of income inequality in the United States. This view actively promotes a policy effort that will try to save the American manufacturing sector. The contrasting view or

"post-industrialism" view sees the shift from manufacturing to service as part of a natural progression of a mature market economy. It does not recognize increasing inequality as being directly linked to deindustrialization, but rather from social factors such as population composition and technological changes in the labor market. Chevan and Stokes' analysis presented evidence in accordance with the deindustrialization perspective, that there is a direct link between the declines in manufacturing employment and income inequality.

Testing the effects of manufacturing concentration, and consequently the lack of in some areas, is important to areas all over the United States that are competing for manufacturing firms. It is apparent that the uneven distribution of the effects of deindustrialization across the United States has lead to competition between states for jobs, causing them to consider Economic Development Policies (EDPs) to attract these less desirable industries (Grant & Wallace, 1994). Furthermore, as manufacturing jobs are on the decline in many areas across the United States, the producer service sector is on the rise. It is important to look at how this sector might be shaping the metropolitan-nonmetropolitan socioeconomic gap as well.

Producer Service Concentration. As mentioned above, there has been a considerable decline in the manufacturing sector since the country began to transition to a service economy (Chevan & Stokes, 2000; Grant & Wallace, 1994; Morris & Western, 1999). Manufacturing jobs were associated with decent pay; however, deindustrialization for many has been marked with the thought of "good jobs" in exchange for "bad" ones due to lower wages and fewer benefits provided in the service sector (Morris & Western, 1999). This is especially a concern for nonmetropolitan communities that do not attract a

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significant number of well-paying service sector jobs. The service sector is extremely

diverse with the low-end of the service industry paying less on average than

manufacturing jobs and the high-end employment paying more than the average

manufacturing job. However, employment is concentrated in the poor paying, low-end of

this industry (Glasmeier & Howland, 1995). On balance, it appears that manufacturing

jobs were, and still are, being replaced with low paying service sector jobs.

Mencken and Singelmann (1998) found that producer service concentration has a

positive effect on employment, income, and earnings growth in metropolitan areas, and

little effect on employment, income, and earnings growth in nonmetropolitan areas. This

may be because high-quality producer services are less likely to locate in

nonmetropolitan areas. These services need economies of scale and access to clients and

resources that few nonmetropolitan areas can provide. Therefore, as manufacturing

relocates, for example from nonmetropolitan areas to overseas, high-quality producer

service jobs are not coming in to replace them (see also Goe, 1994). The producer

service jobs that do accumulate in nonmetropolitan areas tend to be back-office, low-skill

corporations which are in search of cheap and often temporary labor. Those services

which have materialized in nonmetropolitan economies tend to be retail service sector

jobs (big box operations) with few benefits to the local economy.

Globalization. The population and industry trends in nonmetropolitan economies

reviewed above are, in part, the product of the globalization of capital and the integration

of nonmetropolitan economies into the world system. It may be these nonmetropolitan

economies that have been most negatively affected by globalization since the 1980s.

Dependency theorists have examined how countries have been impoverished with

growing globalization. However, there has been less interest in how globalization has affected different areas within core counties (Morris & Western, 1999).

The Fordist production model has been forever changed due to increasing integration of world markets. Globalization has led to outsourcing parts or all of the production process resulting in a change in local economies in the United States. We have also experienced increased trade due to liberalization and decreased transportation costs (Freenstra, 1998). While some contend that trade does not make a large difference in employment changes, Feenstra (1998) argues that products are being imported at more advanced stages of the production process and then sold under American brand names. The outsourcing of a large part of production does indeed lead to decreased demand for low-skilled labor within our own borders. Feenstra (1998) finds that all foreign outsourcing has increased since the 1970s and argues that this in turn impacts employment and wages of low-skilled workers. While we often look at globalization through the lens of trading final goods, Feenstra points out that this in fact downplays the impact of globalization on production activity here in the United States. The position of low-skilled laborers in industrial counties is greatly affected by not only new technology but increasing globalization.

Dobbin (2005) comments that globalization is the biggest trend shaping manufacturing with a continuing shift of workers overseas. New urban sociologists point out that we live in a world where capital is mobile and places are fixed. Therefore, it is in the best interest of capitalist actors to exploit new markets in search of lower production costs. Past research has demonstrated the vulnerability of small local economies that are dependent on mobile capital (Kodras, 1997; Mencken & Singelmann, 1998). Grant and

Wallace (1994) agree that the decline in the U.S. manufacturing sector means a beginning

of a new global era of competition. A more open economy means that rural areas are

more vulnerable to import penetration through technological advances (Wojan, 1998).

It is against this backdrop of economic restructuring of nonmetropolitan

economies that I examine the relationship between the role of the public sector as it

affects economic growth and development. Nonmetropolitan economies have faced

significant challenges, such as deindustrialization and changes in population size and

composition. Past research of nonmetropolitan economy has focused almost exclusively

on the economic consequences of changes in private sustenance functions (particularly

manufacturing and farming). I propose to examine the role of public sustenance

organization on local economic growth and development in nonmetropolitan America.

For example, one strategy that nonmetropolitan economies have pursued is chasing

federal employment (prisons, facilities, etc.) as a means of stabilizing their economies.

Do such facilities create new jobs, and do they have any effect on poverty and income

inequality? In the next section I present the theoretical basis for this research. That is

followed by a review of the literature on the impact of public sustenance organization.

Section 2. Implications of Public Sustenance for Local Economic Growth and
Development

The ecological perspective, also referred to as social ecology or human ecology,

initiated the incorporation of competition and growth with geography and spatial

processes. Human ecology is defined as the study of the relations of organisms to their

environment. In its infancy, it helped explain certain aspects of rapid growth in

American cities in the early 1900s (Hawley, 1986). The underlying premise is that

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human communities are patterned much the same way as plant communities which adapt in time and space, have working relationships with their environments, and utilize diverse talents. Taking a more functionalist perspective, human ecologists view populations as ecosystems and entities that are interdependent and function as an adaptive unit constantly moving towards a state of equilibrium.

Originally, human ecologists were concerned mostly about ways which humans organized themselves in a given population; however, the theory evolved to include ideas of adaptation, growth, and evolution of social systems (Eberts, 1998; Hawley, 1986; Poston, 1984). The focus of the theoretical approach can be separated into two phases: pre-WWII and post war. The pre-WWII theoretical development was dominated by the Chicago School focusing on explaining spatial patterns through behaviorist or sociobogenic factors (Gottdiener, 1985). More specifically, classical human ecology looked closely at the driving forces of competition within industries and locations of resident groups forming a community (Kasarda & Irwin, 1991).

Post-war, Hawley's 1950 publication of *Human Ecology* laid an in-depth view of human ecology and shifted the focus to the importance of transportation and communication technologies in society (Gottdiener, 1985). Smith (1995) summarizes the assumptions of human ecology put forth by Hawley (1950):

> First, it is a materialistic approach, emphasizing the importance of how people gain sustenance from the environment. Second, population, its size, and its spatial distribution are seen as key factors in social organization…Third, technology, particularly as it shapes communication and transportation networks, is critically important to understanding social change. Finally, the emergence of dominance and hierarchy is a central issue in human ecology and is linked closely to a community's key function… (p. 447)

Hawley (1986) linked social system development to external factors such as resource flows. Technology, the type of sustenance organization, and the collective characteristic of the environmental linkages and exchanges determine the level of resource production (goods, services, information), which in turn, determines social system development (Kasarda & Irwin, 1991). Similarly, this perspective attributes change in employment opportunity to national economic expansions or contractions, the local industrial mix, and competitive advantages of a community (Kasarda & Irwin, 1991). Human ecology connects advances in transportation and communication technologies to the transformation of localities. Because each local/regional social system is linked to external places, each is affected by fluctuations in external resource flow. An example of this would be national business cycles. This has an effect on the local community because it affects the volume of resources available. The interruption or increase of external resource flow impacts the locality, disrupting the state of equilibrium strived for, and forcing communities to adapt. This may result in restructuring of the division of labor, local employment growth/decline or population growth/decline in an area.

Growth of an ecosystem (or local economy) is highly dependent on the sustenance function and diversity of local sustenance activities (Mencken, 2000). Human ecology emphasizes the natural and built environmental factors of development while giving less thought to political or individual actors in social systems. Social system growth is achieved, therefore, through spatial dominance of sustenance functions in an area as well as the diversity of sustenance activities within the economic area (Mencken, 1997). That is, a local system will grow when other ecosystems are increasingly dependent upon the

resources that the local system generates (Poston, 1994). The human ecology perspective is used and supported by research that explains economic performance in local economies through competitive advantages of local place such as natural resources, the built environment (i.e. infrastructure such as roads, water systems, fiber optic lines), technology, in both transportation and communication, the proximity to agglomeration economies, and the dominance of sustenance activities in an area (Hooks, 1994; Kasarda & Irwin, 1991; Mencken, 2000; Murdock et al., 1993).

The human ecology perspective is disdainful of the role that the state plays in growth (see Frisbie & Kasarda, 1988; Hooks, 1994). The basic idea is that state processes crowd-out other complex structures, and hinder an ecosystem's ability to achieve equilibrium. With private sustenance structures, equilibrium is achieved on the rearrangement of the system parts to meet changes in the external environment. These changes are expected to be the most rational adaptations, given constant levels of transportation and communication technologies. Private sector decisions and movements are fluid and rapid. In the public sector, decisions are highly bureaucratized. As such, they are less efficient and hinder a ecosystem's ability to adapt to rapid changes in either the biophysical or ecumenical environment. Moreover, ecosystems that are over-dependent upon public structures for sustenance are at a distinct growth disadvantage. The public sector limits growth via bureaucracy. Wages and personnel are determined by collective bureaucratic decisions, and not market forces. Therefore, ceteris paribus, ecosystems with a greater concentration of public sector employment will not grow at the same rate.

Much like the ecological perspective, the political economy perspective, often called new urban sociology, is concerned with domination/subordination, growth, and development of spatial units. Developed years after the ecological perspective, new urban sociology is influenced by a number of different theoretical streams including critical theory, neo-Marxist sociology, urban political economy, and dependency/world system analysis (Smith, 1995). New urban sociology came to the forefront during the 1970s with Harvey (1982) and Castells (1977).   More concerned with explaining local change though societal processes, social justice, and key political and economic elites in a locality, new urban sociology pays less attention to the effects of traditional changes in transportation and communication technology emphasized by the ecological perspective. While these things are clearly still relevant, new urban sociology is more interested in how the built environment developed, where, by whom, and for whom. Smith (1995, pp. 440-441) summarizes the basic assumptions of new urban sociology as the following: 1) cities are situated in hierarchical global system, 2) the world-system is one of competitive capitalism (politicians and businesspeople are playing on a global system), 3) capital is easily moved while cities are locationally fixed, so capital moves from place to place trying to improve profits, 4) politics and governments matter, and 5) people and circumstances differ according to time and place, and these differences matter.

The influence of some of these assumptions is illustrated in Feagin's (1988) case study of Houston, Texas. Feagin (1988) summarizes the development of Houston by tracing development through timber, cotton production, oil extraction, and finally headquarters to a global oil industry. His basic argument is that this free-enterprise city is not as freely developed as promoted. It did not develop from basic technological changes

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that were driven solely by market forces. Instead it was carefully created by government and business elites.

While not rejecting the importance of transportation and communication technologies in the development of cities, Feagin criticizes the mainstream ecological approach for not examining the political-economic context or history of such technologies. While human ecology may attribute the rapid growth in Sunbelt cities to technological development, free market, and good business climate; Feagin points out that state and political elites played a large role in investing in the growth of these cities. Federal subsidies in the form of home mortgages, highways, oil production, decentralized airports all encouraged growth of cities like Houston and growth of suburbanization. He describes the process as intentional actions by political and economic elites that have had lasting effects on the distribution, development, and growth of Houston. New urban sociology also emphasizes that no place is an island in and of itself. All places are affected not only by economy, space, and the state, but also by history and its position in the global capitalistic system.

The new urban sociology perspective is on the other end of the continuum from the ecological perspective. While downplaying traditional ecological factors such as transportation and communication, it focuses on the importance of local political and economic elites in the development and growth of an area (Feagin, 1988; Gottdiener, 1994; Hooks & Getz, 1998; Lobao & Hooks, 2003; Smith, 1995). Political elites play a significant role in nonmetropolitan communities as well by attempting to create a pro-business environment to attract jobs. This has become increasingly true as industry in nonmetropolitan communities has increasingly shifted away from large manufacturing

firms creating a need for new industry to move in. Nonmetropolitan communities often

try to attract businesses by trying to keep corporate profits high through tax incentives

and keeping wages low. Yet attracting new industry through these methods may create an

environment that stifles economic growth rather than helping it.

More recent advances in ecological theory and research have attempted to counter

some of the political economy critiques of human ecology. Most specifically, Hirschl et

al. (1998) maintain that ecosystems have both a public and private environmental niche.

The private niche refers to private industry and jobs in this sector. However, they

maintain that 21 percent of all goods and services purchased in the United States are

purchased by some level of government. Moreover, the government, at all levels,

provides direct sustenance to local communities through transfer payments, in particular

Social Security payments. There is also the effect of local polity employment. The

public sector has become an important part of the environment. The jobs provided by the

public sector are sustenance activities for local ecosystems. While sustenance activities

have traditionally been limited to private sector activities and environmental niches have

been primarily conceptualized as those associated with natural resource and other largely

private activities, a portion of each ecosystem is dependent upon public sustenance

niches. Therefore, ecological models should partition sustenance activities into private

and public activities.

Federal facilities, local government employment, and government investment and

purchasing all represent a secondary niche typically ignored in ecological research.

Ecological modeling assumes that local ecosystem growth, size, and complexity are a

function of niche size and diversity. But this past research has focused exclusively on the

primary niche (i.e. private sector niche). Do places with an expanded secondary, public

sector niche perform better than places that lack such access? If niche size is

determinant, then the answer should be yes. In the next section I review previous

research on the economic impact of public sector employment and spending in order to

inform my formal hypotheses.

Section 3. Review of Literature on the Economic Impact of the Public Sector.

Federal facilities and government employment are two of the key measures of

public sustenance I use to predict economic growth and development. Federal facilities

chasing has surpassed smokestack chasing as a means to create jobs in nonmetropolitan

America (Hooks et al., 2004). Federal facilities can take on all types of form. From

research and development, to data and information processing, to federal prisons, to

defense facilities, federal facilities can be found throughout our country. In looking at

both military and civilian facilities, Hooks (2003) found that the state has indeed played

an important role in contributing to the local economy and growth in nonfederal earnings.

When military spending was high, regions with national security facilities grew rapidly,

and when civilian spending was high, regions with civilian facilities grew rapidly.

However, the focus on growth ignores the stabilizing effect a federal facility can

have on a nonmetropolitan economy that has been contending with tumultuous effects of

economic restructuring and globalization. Government (federal in particular)

employment can stabilize local economies against economic recessions. The federal

government is not an entity that reduces employment via layoffs very often. Therefore,

these locales have a relatively stable employment picture. Furthermore, the federal pay

system is considered well-paying in nonmetropolitan America. Therefore, the presence

of these jobs can sustain multiplier or downstream jobs in the local economy (housing, retail, etc.).

More recently the impact of state and federal prison facilities has been of interest to communities trying to stimulate the local economy. This country has experienced a need for new prisons as the incarceration rate has increased dramatically since the 1980s (Cheery & Kunce, 2001; Myers & Martin, 2004). Along with the need for new facilities there has been an increase in communities who see prisons as labor-intensive, non-polluting institution that can contribute to the local economy. Cherry and Kunce (2001) found that in California between 1982 and 1994 those communities more likely to host a prison were lagging economically compared to those who did not host a prison, supporting the thought that prisons were sought after by communities hoping that the economic benefits would outweigh the externalities, or negative impact, of the facility. Cherry and Kunce (2001) also found that hosting a prison was inversely related to manufacturing firms per square mile where those with more manufacturing were less likely to host a prison. This is important as we have seen the trend of manufacturing moving overseas throughout the country. Those economies that relied heavily on manufacturing for good paying jobs may be turning to prisons and other federal facilities as replacements.

Myers and Martin (2004) analyzed local residents' views of new prisons on future property values, the economy, and cost of living. They found that there is still a slight "not in my back yard" attitude where people believe that visitors, crime, and safety were externalities of prisons and would decrease property values and increase the cost of living. However, as a whole, only 10 percent of those people in close proximity to the

proposed prison reported that it would be bad for the economy, and 33 percent believe

that it would have no impact (Myers & Martin, 2004). Reports such as those presented in

Johnson and Beale (1998) boast of nonmetropolitan population losses being reversed by

the boom in prison construction. Lake County, Tennessee for example opened a state

prison in 1992 and created more than 1,000 (counted as residents) inmates and 350 new

jobs for the local economy. Advocates and critics for prison construction often share the

view that it most likely contributes to economic development. The prison system

increased almost 400 percent between 1980 and 1998. If prison construction lead to

economic growth, this heavy expansion period should have resulted in higher economic

development in those areas that attracted prisons.

Hooks et al. (2004) attribute the finding of a positive relationship between prisons

and economic growth to looking at only a few cases and perceptions of leaders in the

community, instead of actual data on economic growth. Hooks et al. (2004) realize that

high-tech national security facilities do spur economic growth but compare prisons to

facilities such as military bases which do not spur comparable economic growth. One

reason why prisons may not reach their full potential for nonmetropolitan areas is that

many of the goods and services needed for construction are not available and therefore

outsourced to other larger economies dispersing the direct effect of prison construction in

the local economy. Overall, Hooks et al. (2004) found that nonmetropolitan areas

without prisons actually grew at a faster rate and employment grew more slowly in areas

with prisons. They do point out, however, that in growing counties, prisons do contribute

to the growth in public-sector employment but total employment does not significantly

change. They also find that among slow-growth areas, prisons may in fact have a

detrimental effect explaining that prisons may crowd out alternative economic activity

especially in communities that are competing for prisons and therefore supplying

infrastructure to compete with other communities (Hooks et al., 2004).

Another important aspect of local government employment is research and

development. Hooks and Getz (1998) examined research and development facilities and

employment growth from 1970 to 1994. During this time period there a positive

relationship between air flights and manufacturing growth which illustrates the

importance of infrastructural development in increasing growth in an area. There was

also a positive relationship between college education and growth in employment,

illustrating the increasing importance of human capital and, in particular, a well-educated

work force (Hooks & Getz, 1998). When looking at federal properties they found that

while civilian installations were not associated with employment growth, the National

Aeronautics and Space Administration (NASA) and military industrial facilities

stimulated manufacturing growth and overall employment growth, and the influence of

these installations varied by the amount of spending.

In comparing the effect of federal facilities on regional development, Hooks

(2003) found that those areas that had facilities that were involved with science and

technology programs (whether military or civilian in nature) had a stronger effect on

regional economies than other federal facilities. Research installations such as NASA

and the National Institutes for Health (NIH) have contributed to regional development in

the same magnitude as the nuclear weapons laboratories and military installations

(Hooks, 2003). Not only are these facilities more likely to emphasize performance than

cost control, they also recruit a highly educated workforce and produce spin-off

technologies that influence other local industries.

Hooks (2003) analyzed the degree to which federal installations (both military

and civilian facilities) influenced regional economic growth between 1972 and 1994. He

found that even in the midst of base closures and realignment, federal facilities

contributed to regional economies indicating that government can still alter economic

activity. The results of Hooks' study showed that the budgetary trends associated with

these facilities did indeed impact local economic activity. When military spending was

high, regions with national security facilities grew quickly, and the same was true for

civilian spending in areas with civilian installations, although such spending is not near as

large as military spending and has been limited to a few federal facilities (Hooks, 2003).

As mentioned above, federal installations that play a role in science and technology made

large impacts on the regional economy. While there is much more spending on military

facilities many of these facilities such as military bases and other "low-tech" national

security installations have little influence on the economic growth of a region (Hooks,

2003).

Hypotheses

Based on the general findings of previous literature, I predict that there is a

positive relationship between public sustenance structures and economic growth among

nonmetropolitan economies. In light of deindustrialization, public sustenance structures

offer more long-term employment stability than do remaining low cost manufacturing

jobs, or seasonal service sector jobs. Therefore, in nonmetropolitan economies, a greater

concentration of government employment causes greater levels of economic growth.

Hypothesis One: There is a positive relationship between public sustenance structures and economic growth among nonmetropolitan economies.

The relationship between public sustenance structures and economic development is less clear. To the extent that economic growth reduces poverty and increases income, then we should see a positive relationship between public sustenance structures and economic development in nonmetropolitan America, especially during the 1990s when nonmetropolitan economies had further transitioned from agriculture and manufacturing as primary sources of sustenance. The effects on income inequality, however, are less clear.

Growth in median family income has slowed since the 1970s and income inequality has risen (Lobao & Hooks, 2003). The effects of local government employment on levels of inequality are mixed. Lobao (1970) reports that public (state-sector) employment in an area is related to less income inequality. However, others find that public employment has little effect on income and inequality. Lobao and Hooks (2003) examined federal, state, and local government to determine the effects of public employment and social welfare transfers on local populations. They found that federal employment has a more beneficial local effect (i.e. reduces inequality more) than the state/local sector (Lobao & Hooks, 2003). Lobao and Hooks (2003) find little evidence of deterring family income growth except at the state/local employment level which they found to depress median family income. They found that government spending did play a significant role in decreasing inequality and those same government variables that reduce inequality also promote income growth in some cases, or at worst do not deter it (Lobao & Hooks, 2003).

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However, Mencken and Tolbert (2004) find that federal salary spending in Appalachia increases income inequality in this region. The prevailing theory is that a higher concentration of federal employment creates a severe wage gap in economically challenged regions. The general entry level salary for a GS-5 Step 1, the entry level stage for government clerks, is $26,000. This is not a high wage for urban labor markets. However, for nonmetropolitan labor markets a $26,000 (plus federal benefits) annual salary is a decent paying job. However, these facilities can divide nonmetropolitan economies into 'haves' and 'have nots,' or those who have the relatively well-paying government jobs, and those that have the remaining opportunities, which pay substantially less (see Billings & Blee 2000; Duncan 1999, 1992). While government facilities may have less impact on inequality in urban economies, in nonmetropolitan economies they have the potential to create a wide wage disparity. This is an explanation drawn by Mencken and Tolbert (2004) to explain their anomalous results. I test it further in this dissertation with additional measures of public sustenance structures.

> *Hypothesis Two: There is a positive relationship between public sustenance concentration and economic development in nonmetropolitan economies.*

However, there is one other possibility to pursue. In counties where everyone is poor, there is little inequality. Similarly, in counties where everyone is rich, there is little inequality. It is possible that a high level of government facility concentration, for example, Monongalia County, West Virginia which has four federal facilities (NIOSH, FBI White Collar Crime Center, IRS, DOE), creates a ceiling for much of the labor force. This may, at some point, create a curvilinear effect of federal employment concentration on income inequality.

Hypothesis Three: There is a curvilinear effect of public sustenance structures on income inequality in nonmetropolitan economies.

CHAPTER TWO

Methods and Analysis

Data

The data used for this analysis are all secondary data from 1990 to 2000. The

data are compiled from the U.S. Decennial Census, the Regional Economic Information

System (REIS) put out by the Bureau of Economic Analysis of the U.S. Department of

Commerce, and the Consolidated Federal Funds Report which represents awards from the

government. The sources and specifics about the variables remain the same across all

studies unless specified elsewhere.

Unit of Analysis

The unit of analysis is U.S. counties. Counties are the appropriate unit of analysis

as they are easily distinguished from one another when it comes to metropolitan and

nonmetropolitan classifications. Also counties are easily distinguished by region of the

country, an important covariate of government investment and economic performance.

Region is most commonly determined by the state, and counties fit wholly into states.

The data set contains a total of 3,087 counties. There are 2,276 nonmetropolitan counties

out of which 243 (nearly 11 percent) are nonmetropolitan and government dependent

counties (where greater than 25 percent of total income comes from the government). For

visual location of counties see Figure 1.
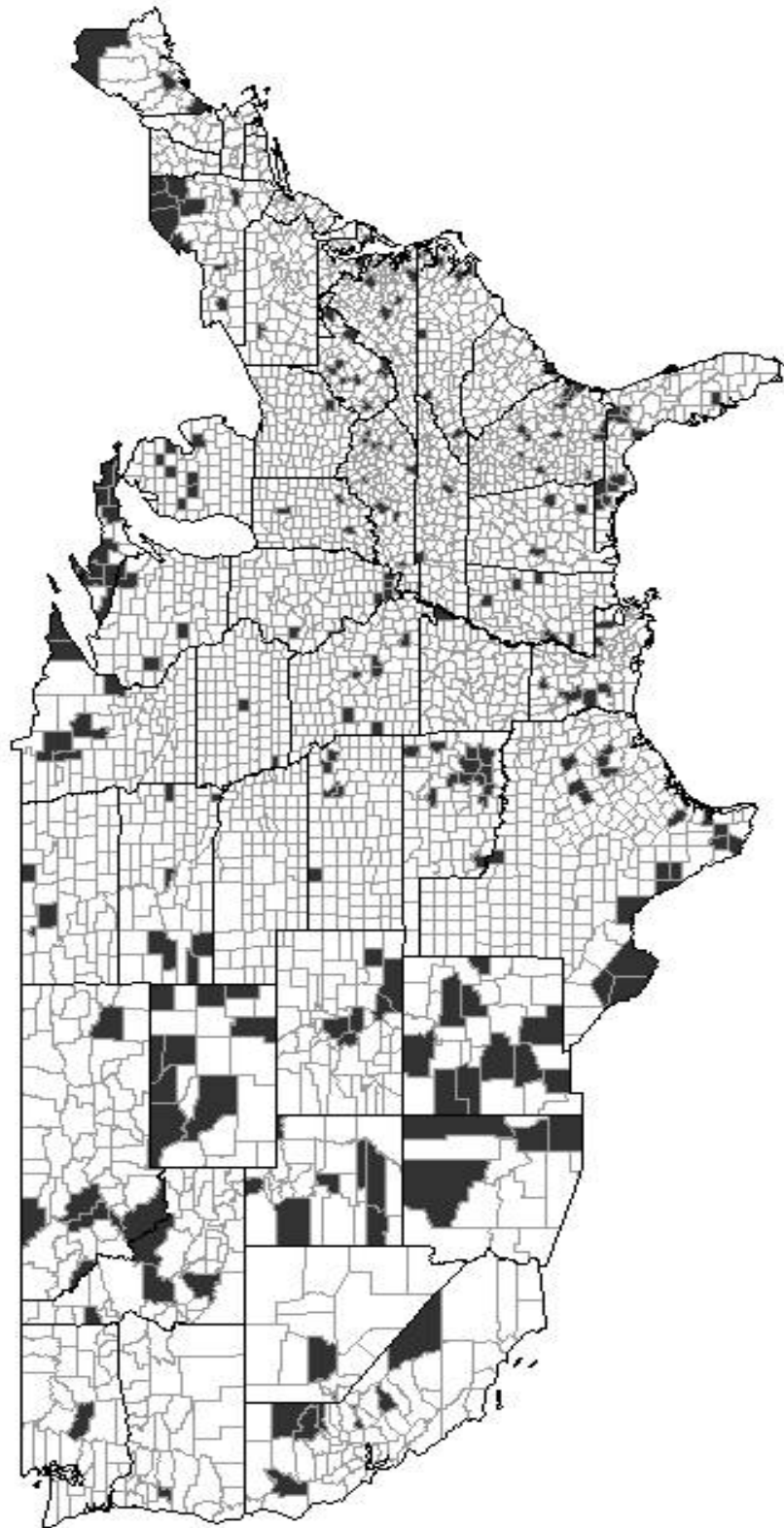
Figure 1. Government Dependent Counties

I am examining the effect of several key independent variables representing

public sustenance structures in this analysis. *Federal Procurement/Defense Spending* is

federal spending in defense which includes defense procurement and salaries and wages

to military and civilian personnel. *Federal Public Investment Spending* includes research

(basic science/engineering, agricultural, forestry, economic/social science,

environmental, policy, energy, and university research), infrastructure investment

(development grants, airport aid, roads, water systems, loans for infrastructure, rural

communication systems, electrification, transportation, and planning grants), and related

public good investments (school funds, vocational education support, community

development block grants, job training grants, technology grants, trade promotion grants,

business assistance/small business loans, and the like). All federal *spending* measures are

three year averages around the year measured (i.e. 1993= three year average of 1992,

1993, 1994). I originally included average nondefense federal salaries and wages;

however, this variable has been removed from the final analysis due to collinearity issues

with federal employment, one of the main variables of interest.

Also included as key variables representing public sustenance structures is the

percent of total federal employment in 1993 and the percent of total state and local

employment (combined) in 1993, as past literature suggests that federal and state/local

employment may affect economic growth and development differently (Lobao & Hooks,

2003).

Several variables are categorized according to the Economic Research Service's

(ERS) 1989 County Typology Codes released by the United States Department of

Agriculture (USDA). The ERS classifies all counties according to six non-overlapping categories of economic dependence and seven overlapping categories of policy-relevant themes. The six categories of economic dependence include farming-dependent, mining-dependent, manufacturing-dependent, government-dependent, services-dependent and nonspecialized counties. They are based on the amount of labor and proprietors' income earned (1987 to 1989 annualized average) from any particular economic activity. In this analysis I make use of the farming-dependent variable, which are those counties with 20 percent or more of income from farming, the mining-dependent variable (counties with 15 percent of income from mining), and, a key variable of interest, the government-dependent variable (25 percent of income from government).

The final models include two interaction variables. One is the interaction between military employment and nonmetropolitan government dependent counties. The second is the interaction between the percent of federal government employment and nonmetropolitan government dependent counties. This is a test of a concentration effect of federal processes. Also included is a quadratic equation for all the development variables testing the curvilinear effect of federal employment.

Independent control variables are drawn from three theoretical perspectives of regional processes. From human ecology, I control for population density and population change, region, and spatial dependence. For private sustenance activities, I include percent farming, mining, and manufacturing. As the literature review on the economic history of nonmetropolitan America shows, dependency on these industries had negative effects on nonmetropolitan communities. The federal spending measures can be seen through the lens of new urban sociology where the political economy represents a strong

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force in shaping an area (Feagin, 1988; Hooks, 1994; Smith, 1995). Other controls from a labor market perspective include education (percent of adults 25 and older with a high school degree or greater), percent female headed household, percent urban, and percent over the age of 65 (Cotter, 2002). Initially, I had included percent nonwhite, but this variable proved to be highly correlated with percent female headed household and was excluded from the analysis. Tables of all variables used are provided by study in Table 3 and Table 8.

Model of Analysis

I study the effects of public sustenance structures in nonmetropolitan economies with three separate analyses. First, I analyze the effects of key measures of public sustenance on economic growth in nonmetropolitan counties from 1990 to 2000. I employ two key measures of county economic growth: private nonfarm employment, and total earnings growth for economic expansion period of this decade (between 1993-1998 the U.S. economy was in a business cycle of recovery). Second, I examine the effects of public sustenance structures on measures of economic development (income inequality, poverty rate, median family income) in nonmetropolitan counties from 1990 to 2000.

Finally, I looked more in-depth at the effects of government spending on measures of growth and development with a case study of Harrison County, West Virginia which specifically looks at the 1990 to 2000 time period. Harrison County was chosen because in 1992 the Federal Bureau of Investigation opened the Criminal Justice Information Systems division headquarters in Harrison, County. This move added 2,700 jobs to the county's economy, making the FBI the largest employer in the region. The analysis consists of comparing descriptive statistics of 1990 data for Harrison County and

surrounding counties to 2000 data which should reflect the effects of the added FBI

facility. In addition, I pull matching counties (based on similar population, income, and

poverty levels in the 1990s) for comparison counties found in the Appalachian region

specifically within the states of West Virginia, Ohio, and Pennsylvania.

I use spatial lag regression, described in more depth below, to analyze models in

the first and second analyses in order to control for spatial dependence in the dependent

variable. All models are weighted by 1990 population. Because population growth is in

percent, one has to control for the size of the place as a small place may grow at a larger

percent but not increase in as many people (i.e. regression toward the mean- see Jackman

& Jackman, 1980). Regression coefficients can be interpreted the same as an OLS

coefficient, where the coefficient indicates the change in the dependent variable based on

one unit increase in the independent variable. Initially, I had included only

nonmetropolitan counties in the analysis. However, ordinary least squares analysis

requires that the error term be normally distributed, have a mean of zero, and constant

error variance. None of these assumptions was met when nonmetropolitan counties are

exclusively modeled, although weighting by population corrected the constant error

variance problem. Therefore, I include all counties and a dummy variable for

metropolitan counties. In the full model, the error term is well-behaved.

Spatial Lag

The spatial lag variable allows for each model to control for spatial effects that

occur when economic processes cross the geographical units of analysis. In essence

because the analysis is done using politically defined units (county) there are often

processes that cross over the defined boundaries creating spatial autocorrelation among

units. Therefore, a spatial lag weight is introduced for each of the dependent variables to control for effects created by nearby counties.

When politically constructed units of analysis (e.g. counties) are used in research of economic and social processes there is potential for spatial autocorrelation among observations. Included is a spatial autoregressive correction (spatial lag) of the form: $\sum_j w_{ij} x_j$. Anselin (1996) shows that this formula creates a spatial lag for variable **x** at location $\mathbf{x_i}$, which is the sum of the product of each county with its corresponding weight from the **ith** row of the spatial weights matrix ($\mathbf{w_{ij}}$). It is the weighted average of values for all locations. It allows the dependent variable value in county **x** to take into consideration the influence of nearby counties. The spatial weights matrix is a distance measure between each county in the analysis. A squared inverse distance matrix based on a gravity model is used. Each county's longitude and latitude coordinates are used as the distance point reference in the analysis.

CHAPTER THREE

Results

Descriptive and T-Test Results

Before estimating the regression models, I compare nonmetropolitan government

dependent counties to other county types on economic growth and development

measures. First, I examine the representation of government dependent nonmetropolitan

counties among the fastest growing counties in the 1990s, in terms of nonfarm

employment and earnings growth. Second, a t-test is used to compare earnings and

employment growth in nonmetropolitan government dependent counties (greater than 25

percent of total income from government) and all other counties (metropolitan and

nonmetropolitan).

Tables 1 and 2 present a list of the top 20 nonmetropolitan counties in terms of

nonfarm employment and total earnings growth for the 1993-1998 time frame. While

government dependent counties comprise 11 percent of total nonmetropolitan counties,

they are over-represented among the top 20 nonmetropolitan counties on both growth

measures. Thirty-five percent of the top nonfarm employment growth nonmetropolitan

counties were government dependent counties (Park, CO; Allen, LA; Bledsoe, TN;

Jackson, KS; Echols, GA; Huerfano, CO; Keweenaw, MI). Park County, Colorado,

experienced 66 percent growth in nonfarm employment during the 1990s. A similar

trend holds for total earnings growth. Twenty-five percent of the top 20 performing

nonmetrpolitan counties were government dependent counties. Keweenaw County,

Michigan had a total earnings growth rate of 56 percent during the 1993-1998 period.

Table 1

Top 20 Performing Nonmetropolitan Counties for Nonfarm
Employment Growth 1993-1998

County	Nonfarm Employment Growth 1993-1998
Tunica, Mississippi	1.36036
Baker, Georgia	0.78387
Dawson, Georgia	0.73416
Jackson, Tennessee	0.69955
Franklin, Texas	0.69606
Park, Colorado	0.66084
Allen, Louisiana	0.63168
Elbert, Colorado	0.62962
McPherson, Nebraska	0.62083
St. Helena, Louisiana	0.61015
Crawford, Georgia	0.60581
Bledsoe, Tennessee	0.60467
Jackson, Kansas	0.59527
Echols, Georgia	0.59491
Blanco, Texas	0.59101
Texas, Oklahoma	0.57881
Alpine, California	0.56963
Quitman, Georgia	0.56531
Huerfano, Colorado	0.56359
Keweenaw, Michigan	0.55925

Government Dependent Counties in Bold

Tables 1 and 2 demonstrate that government dependent counties do perform well amongst nonmetropolitan counties. I further look at how government dependent nonmetropolitan counties compare to other county times through a series of t-tests. The t-test results indicate that earnings and employment grew at significantly greater rates in nonmetropolitan government dependent counties during the 1990s than in other county types. Earnings grew in nonmetropolitan government dependent counties by 2 percent more than all other counties, and nonfarm employment grew by 1.4 percent more compared to all other counties (see Figures 2 and 3).

Table 2

Top 20 Performing Nonmetropolitan Counties for Nonfarm
Earnings Growth 1993-1998

County	Nonfarm Earnings Growth 1993-1998
Tunica, Mississippi	1.20701
Dawson, Georgia	0.57794
Keweenaw, Michigan	0.56049
Park, Colorado	0.53819
Alpine, California	0.51752
Franklin, Texas	0.51083
Jackson, Tennessee	0.50342
Elbert, Colorado	0.48245
Archuleta, Colorado	0.48187
Lamar, Mississippi	0.46744
Allen, Louisiana	0.45485
Texas, Oklahoma	0.45277
Washington, Utah	0.45043
Custer, Colorado	0.44025
Long, Georgia	0.43701
Blanco, Texas	0.42882
Burnet, Texas	0.42873
Huerfano, Colorado	0.42861
Wasatch, Utah	0.41837
Crawford, Georgia	0.41141
Eagle, Colorado	0.40695

Government Dependent Counties in Bold

A t-test was also executed comparing earnings and employment growth in nonmetropolitan government dependent counties and other county types. I found an even larger effect when examining only nonmetropolitan counties. Earnings grew by 3.9 percent more in nonmetropolitan government dependent counties compared to all other nonmetropolitan counties. Employment grew by 2.8 percent more in nonmetropolitan government dependent counties compared to all other nonmetropolitan counties. At an aggregate level, those nonmetropolitan counties with the highest concentration of government employment during the 1990s experienced greater economic growth. This suggests that the public niche was an important component of overall ecosystem

expansion, and that nonmetropolitan policies designed to increase government employment should be effective at increasing economic growth in nonmetropolitan America.
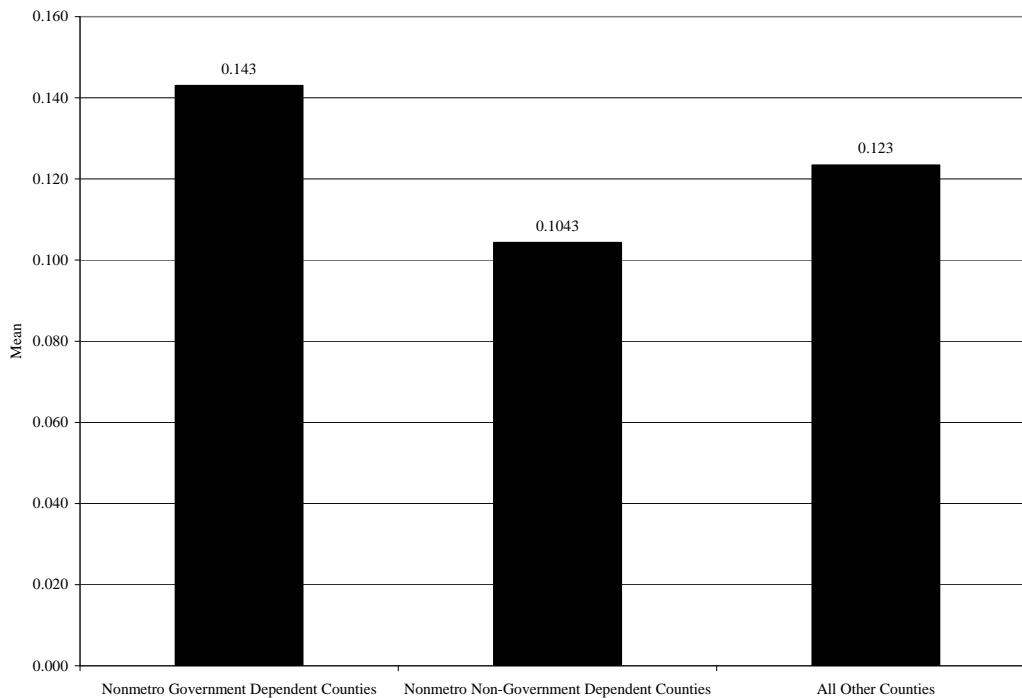
Figure 2. T-Test Results for 1993-1998 Earnings Growth

I repeat this analysis for economic development measures (inequality, poverty, and median family income). When contrasting nonmetropolitan government dependent counties to all other counties, I find that the government dependent counties have lower levels of economic development. Nonmetropolitan government dependent counties have more inequality, 3.7 percent more poverty, and a lower median family income (by $3,835) (see Figures 4-6). These findings are not surprising, given that I was comparing nonmetropolitan to all counties (metropolitan and nonmetropolitan).
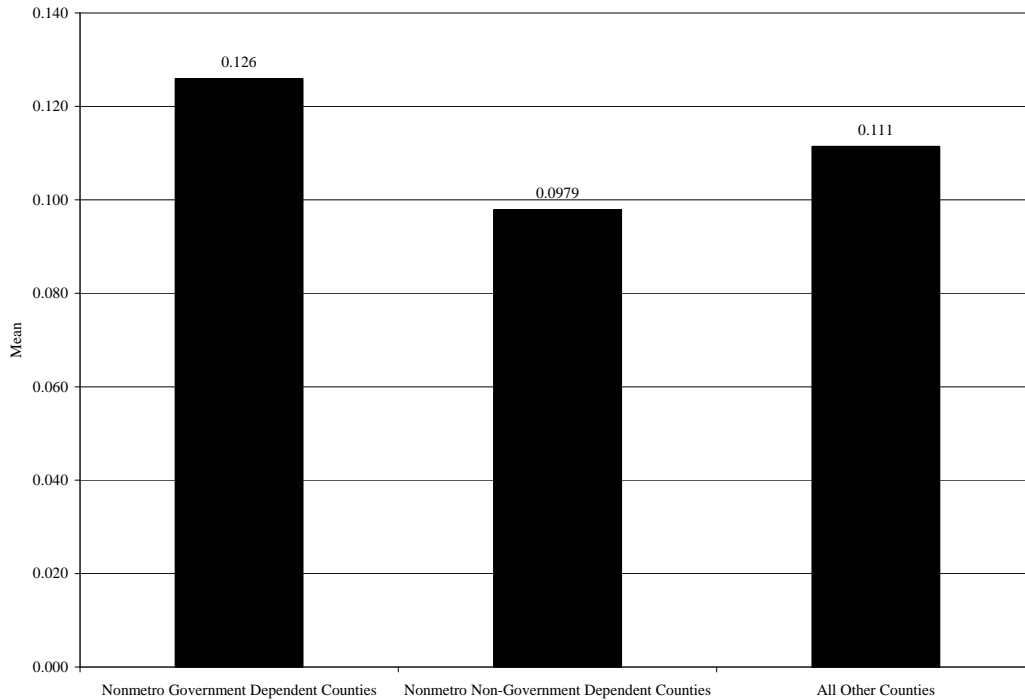
Figure 3. T-Test Results for 1993-1998 Employment Growth

The t-test comparing economic development measures in nonmetropolitan government dependent counties verses all other nonmetropolitan counties show similar results, however. There was more income inequality and poverty (2.516 percent) in nonmetropolitan government dependent counties than in nonmetropolitan counties that lack government dependence. While the median family income was less (about $702) in nonmetropolitan government dependent counties, it was not statistically different. While the analysis for economic growth shows support for Hypothesis One, the results for economic development fail to show support for Hypothesis Two. The t-tests show that, in the aggregate, being a nonmetropolitan government dependent county means less economic development, a finding consistent with the political economy perspective outlined by Lobao and Hooks (2003).
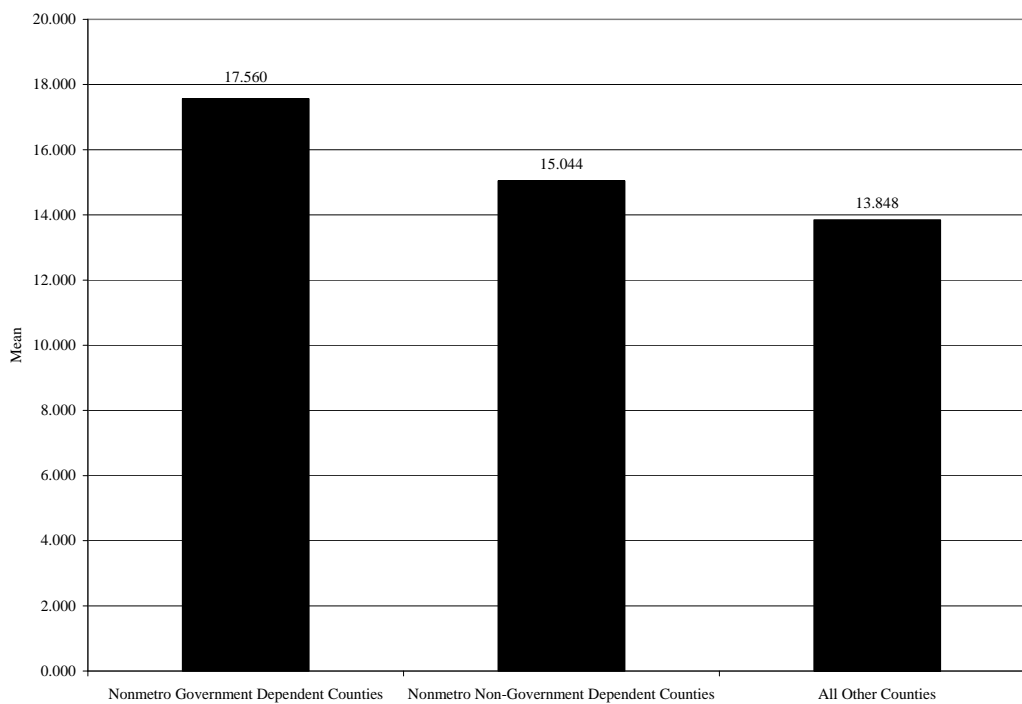
Figure 4. T-Test Results for Proportion of Population in Poverty
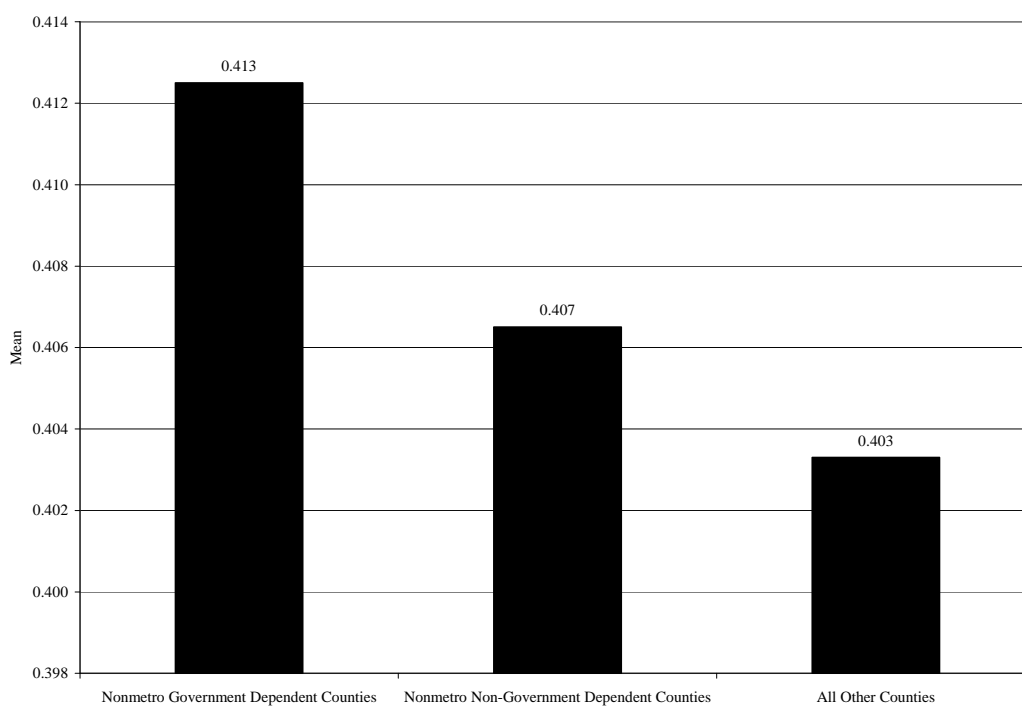
Figure 5. T-Test Results for Income Inequality (Gini)
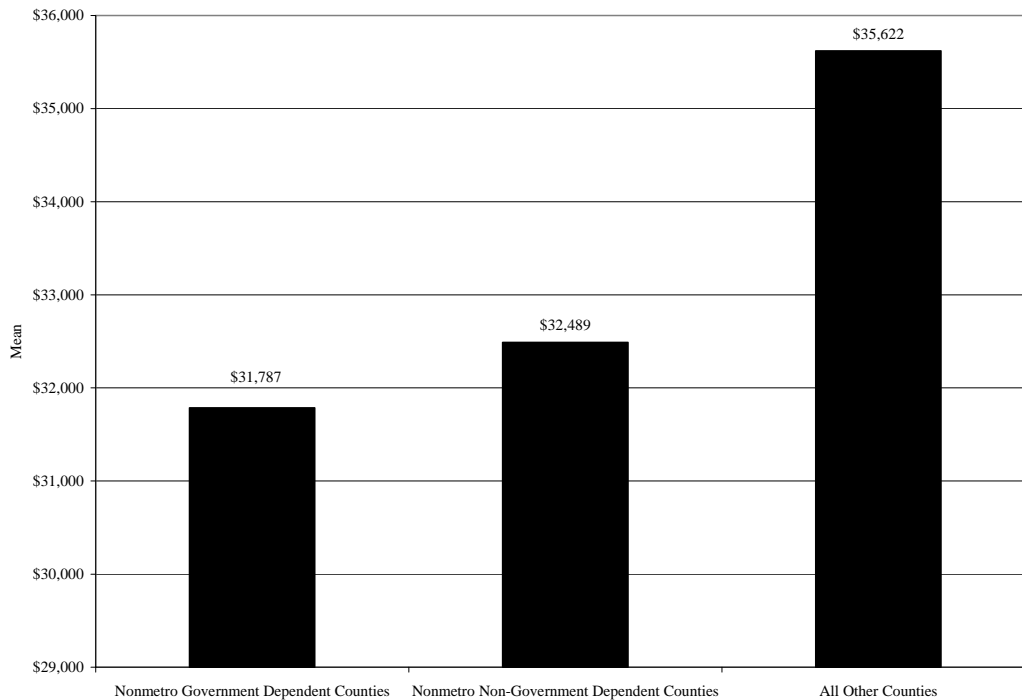
Figure 6. T-Test Results for Median Family Income

The t-test are absent of statistical controls of other important structural features of the counties. For example, Park County, Colorado, and Allen Parish, Louisiana, both were fast growing nonmetropolitan counties in the 1990s. The growth in Allen Parish, Louisiana was due mainly to the Oakdale Detention Center, a Bureau of Prison's expansion project. But the growth in Park County, Colorado was unrelated to the National Park Service presence. It was primarily related to ex-urbanization, or the movement of high skilled engineering and technical jobs from Denver to the bucolic setting of Park County. Therefore, drawing conclusions from descriptive statistics is unwise. The ensuing regression models will help to clarify the role of public sustenance structures on growth and development in nonmetropolitan economies.

Economic Growth Regression Models

As mentioned above, the first study examines economic growth with specific

emphasis on government dependent nonmetropolitan counties across the U.S. (48

continental US states) in the 1990s. I predict the effect of public sustenance measures on

economic growth, which is measured as total earnings growth and private nonfarm

employment growth from 1993-1998. Variables used are presented in Table 3.

Table 3

Variables Used for Economic Growth Models

Type	Description	Mean	Standard Deviation
Dependent Variables	Private Earnings Growth 1993 -1998	0.125	0.113
	Private Nonfarm Employment Growth 1993 - 1998	0.112	0.098
Public Sustenance Structures	Avg. Federal Procurement/Defense Spending 1993	511.992	2149.93
	Avg. Federal Public Investment Spending 1993	204.539	408.478
	1993 % of Total Federal Employment	1.587	2.414
	1993 % Total State/Local Employment	13.753	5.217
	1993 % Military Employment	1.581	3.426
	Government Dependent- 25% or more of total income from government (dummy)	0.079	0.269
Controls	Log Earnings 1992	9.388	1.429
	Log Employment 1992	9.389	1.428
	Population Change 1980-1990	0.029	0.143
	% Urban 1990	0.358	0.293
	Metropolitan (dummy)	0.263	0.44
	Farming dependent (dummy)	0.18	0.384
	Mining dependent (dummy)	0.047	0.212
	% Manufacturing 1993	14.421	10.218
	% Adults HS Degree + 1990	35.141	10.933
	% Female Headed Household 1990	13.083	5.187
	Age: % 65+ 1990	14.912	4.37
	Region: south/nonsouth (dummy)	0.383	0.486
	Spatial lag		
Interaction Variables	% Military Employment*Gov Dep Nonmetro County	0.27	2.27
	% Federal Employment* Gov Dep Nonmetro County	0.295	1.778

The regression results for 1993-1998 earnings growth are presented in Table 4. The results for 1993-1998 employment growth are presented in Table 5. When analyzing private earnings growth, five of the six public sustenance variables are significant. Government employment at the federal, local, state, and military levels all have unanticipated significant negative effects on private earnings growth. The results for employment growth are similar. Government employment at all levels has a significant, negative effect, on employment growth.

The negative effects of public sustenance structures on economic growth (nonfarm employment and earnings growth) are predicted by human ecology theorists who emphasize private sustenance structures (Frisbie & Kasarda, 1988). Over the long term, command economies cannot grow as quickly as market economies (Heilbroner, 1996; Block, 1995). Public sustenance structures have the tendency to crowd out private sector growth. Thus, local ecosystems with a larger government presence will have lower growth rates than those without such a presence. My data confirm this for counties in the 1990s. Second, private sector earnings and employment grow at much faster rates than the public sector. In the private sector, wages and jobs respond to market demand. In the public sector, wages are generally on a set schedule (such as the GS-Government Schedule for federal white collar workers). Also a bureaucracy must often be consulted before new jobs can be added in a geographical location, a process that also generally requires legislative approval of budget changes at some levels. Hypothesis One predicts that greater concentration of federal employment has a positive effect on economic growth in nonmetropolitan economies. The data for the 1990s, a period of economic transformation for nonmetropolitan economies, suggest that this is not the case.

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Table 4

Regression Estimates for Earnings Growth (1993-1998), N=2522

	Earnings Growth	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1993	-3.920E-06 ***	7.710E-07
Avg. Federal Public Investment Spending 1993	1.162E-05	6.870E-06
1993 Percent of Total Federal Employment	-0.005 ***	0.001
1993 Percent Total State/Local Employment	-0.004 ***	3.531E-04
1993 Percent Military Employment	-0.004 ***	4.186E-04
Nonmetro Government Dependent	0.017 *	0.008
Controls		
Log Earnings 1992	-0.014 ***	0.002
Population Change 1980-1990	0.272 ***	0.013
% Urban 1990	-0.013	0.009
Metropolitan (dummy)	0.017 ***	0.004
Farming dependent (dummy)	-0.017	0.009
Mining dependent (dummy)	-0.061 ***	0.011
% Manufacturing 1993	-0.002 ***	0.002
% Adults HS Degree + 1990	7.076E-05	2.012E-04
% Female Headed Households 1990	-0.274 ***	0.048
Age: % 65+ 1990	-0.006 ***	4.420E-04
Region: south/nonsouth	0.012 **	0.004
Spatial Lag	0.567 ***	0.046
		$R^2 = 0.57$

*p<.05, **p<.01, ***p<.001

The Effects of Control Variables

The lack of positive effects among public sustenance structure variables is not likely to be spurious- both models fit very well, explaining over 50 percent of the variance in nonfarm employment and earnings growth. Moreover, the control variables

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in these models behave as expected. For both earnings and employment, percent of the population 65 and over has a negative and significant effect. Older citizens, many of whom are living on fixed incomes, have fixed consumption patterns. As the percent of employment in manufacturing increased both earnings and employment decreased. This is a continuation of a trend that began in the 1970s and accelerated in the 1980s. Nonmetropolitan manufacturing jobs were at the end of the product cycle, where the impact on employment and earnings is at its nadir (Markusen, 1987). Being mining dependent also has a negative effect; although, being farming dependent did not have a significant effect in either model. Being a southern county had a positive and significant effect, and the percent female headed household had a negative and significant correlation with both earnings and employment.

Population growth from 1980 to 1990 was positive and significant in both models indicating that previous growth effects future growth. This is an important finding because population growth is indicative of a built environment and ecosystem conducive to growth (Parker & Frisbie, 1978). That is, resources (i.e. jobs) are available to support continued population inflow. This analysis indicates that growth begets growth, and that inserting government facilities, particularly federal government facilities, will not create more resources, net of that which already exists. While the public sustenance structure is more malleable than private sustenance structures (i.e. legislatures can create government jobs much easier than private sector jobs), this analysis indicates that having more of such jobs does not lead to more economic growth. In fact, the negative coefficients for federal employment concentration indicate that it can keep economies further behind.

Table 5

Regression Estimates for Employment Growth (1993-1998), N=2522

	Employment Growth	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1993	-3.200E-06 ***	7.069E-07
Avg. Federal Public Investment Spending 1993	1.195E-05	6.300E-06
1993 Percent of Total Federal Employment	-0.004 ***	0.001
1993 Percent Total State/Local Employment	-0.003 ***	3.276E-04
1993 Percent Military Employment	-0.003 ***	3.887E-04
Nonmetro Government Dependent	0.011	0.007
Controls		
Log Employment 1992	-0.015 ***	0.002
Population Change 1980-1990	0.291 ***	0.011
% Urban 1990	-0.006	0.009
Metropolitan (dummy)	0.006	0.004
Farming Dependent (dummy)	-0.008	0.008
Mining Dependent (dummy)	-0.039 ***	0.010
% Manufacturing 1993	-0.002 ***	1.937E-04
% Adults HS Degree + 1990	0.001 **	1.836E-04
% Female Headed Households 1990	-0.176 ***	0.044
Age: % 65+ 1990	-0.004 ***	4.134E-04
Region: south/nonsouth	0.010 **	0.004
Spatial Lag	0.401 ***	0.060
		$R^2 = 0.51$

*$p<.05$, **$p<.01$, ***$p<.001$

Government Dependent Counties and Agglomeration Effects

My findings, however, show some contradictory results. While federal employment and spending have negative effects on earnings and employment growth, nonmetropolitan government dependent counties still have a net, positive effect on growth in earnings and employment. Nonfarm employment grew by an additional 1.1

percent in government dependent counties (albeit at p=.06 level of significance), on average, and earnings grew at an additional 1.7 percent. Perhaps what these data show is an agglomeration or concentration effect in the public sector. I test for this possibility with interaction variables between federal and military employment concentration and government dependent status .

After running the initial models I ran the same variables with the inclusion of two interaction variables. I am testing for agglomeration effects. That is, does having a very high concentration of federal jobs make a difference in terms of economic growth? Looking first at the earnings growth model, represented in Table 6, when both interaction effects are included, the effect of nonmetropolitan government dependence goes away while there is a positive relationship between federal employment and nonmetropolitan government dependence. The interaction effect between military employment and nonmetropolitan government dependent counties remains not significant.

The results presented in Table 6 illustrate that in counties that are not dependent upon government employment, the slope for federal employment concentration is b=-.006. Because we are controlling for metropolitan county status with a binary fixed effects variable, this represents the slope for counties that are not metropolitan, and not government dependent nonmetropolitan counties. The interaction effect is positive (b=.005). This is the difference in slope for nonmetropolitan and nonmetropolitan government dependent counties.. Therefore, the slope for nonmetropolitan government dependent counties is (b=-.001), essentially no effect.. The results of the earnings model with interaction effects suggest that higher levels of federal employment have a stabilizing effect on earnings for nonmetroplitan counties.

Table 6

Regression Estimates for Earnings Growth (1993-1998) with Interaction, N=2522

	Earnings Growth	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1993	-3.850E-06 ***	7.703E-07
Avg. Federal Public Investment Spending 1993	1.176E-05	6.870E-06
1993 Percent of Total Federal Employment	-0.006 ***	0.001
1993 Percent Total State/Local Employment	-0.003 ***	3.591E-04
1993 Percent Military Employment	-0.003 ***	4.840E-04
Nonmetro Government Dependent	0.005	0.010
Controls		
Log Earnings 1992	-0.014 ***	0.002
Population Change 1980-1990	0.270 ***	0.013
% Urban 1990	-0.013	0.009
Metropolitan (dummy)	0.017 ***	0.004
Farming dependent (dummy)	-0.017	0.009
Mining dependent (dummy)	-0.061 ***	0.011
% Manufacturing 1993	-0.002 ***	2.111E-04
% Adults HS Degree + 1990	8.719E-05	0.002
% Female Headed Households 1990	-0.278 ***	0.048
Age: % 65+ 1990	-0.006 ***	4.416E-04
Region: south/nonsouth	0.012 **	0.004
Spatial Lag	0.572 ***	0.046
Interaction Variables		
FedEmp * Nonmetro Government Dependent	0.005 **	0.002
MilEmp * Nonmetro Government Dependent	-0.002	0.001
		$R^2 = 0.57$

*p<.05, **p<.01, ***p<.001

The relationship presented in Figure 7 shows that federal employment has a 'stabilizing' effect on earnings growth in nonmetropolitan government dependent counties. It keeps these counties from falling further behind due to the concentration of federal employment. Federal employment does not lead to earnings growth in nonmetropolitan government dependent counties. Net of other important constructs in regional processes (past growth, population structure, private industry concentration), federal employment leads to "less earnings instability" in government dependent nonmetropolitan counties.

Figure 7. The Effects of Federal Employment on Earnings Growth for Nonmetropolitan Government Dependent and Nonmetropolitan Not Government Dependent Counties

I ran the same models including interaction effects for employment growth. The results are presented in Table 7.

Table 7

Regression Estimates for Employment Growth (1993-1998) with Interaction, N=2522

	Employment Growth	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1993	-3.160E-06 ***	7.061E-07
Avg. Federal Public Investment Spending 1993	1.241E-05 *	6.300E-06
1993 Percent of Total Federal Employment	-0.005 ***	0.001
1993 Percent Total State/Local Employment	-0.003 ***	3.330E-04
1993 Percent Military Employment	-0.002 ***	4.513E-04
Nonmetro Government Dependent	0.007	0.009
Controls		
Log Employment 1992	-0.015 ***	0.002
Population Change 1980-1990	0.290 ***	0.011
% Urban 1990	-0.006	0.009
Metropolitan (dummy)	0.006	0.004
Farming dependent (dummy)	-0.008	0.008
Mining dependent (dummy)	-0.039 ***	0.010
% Manufacturing 1993	-0.002 ***	1.934E-04
% Adults HS Degree + 1990	0.001 **	1.835E-04
% Female Headed Households 1990	-0.180 ***	0.044
Age: % 65+ 1990	-0.004 ***	4.131E-04
Region: south/nonsouth	0.010 **	0.004
Spatial Lag	0.422 ***	0.060
Interaction Variables		
FedEmp * Nonmetro Government Dependent	0.004 *	0.002
MilEmp * Nonmetro Government Dependent	-0.002 **	0.001
		$R^2 = 0.52$

*p<.05, **p<.01, ***p<.001

Again, federal employment concentration stabilizes, at best, nonmetropolitan government counties, but limits the growth potential of other county types (see Figure 8). Military concentration has an even greater negative effect on growth in nonmetropolitan government dependent counties. However, the 1990s were a period of military post-war downsizing (especially in terms of military personnel). This may explain why military employment in 1993 had a negative effect on both employment and income growth during the 1990s.
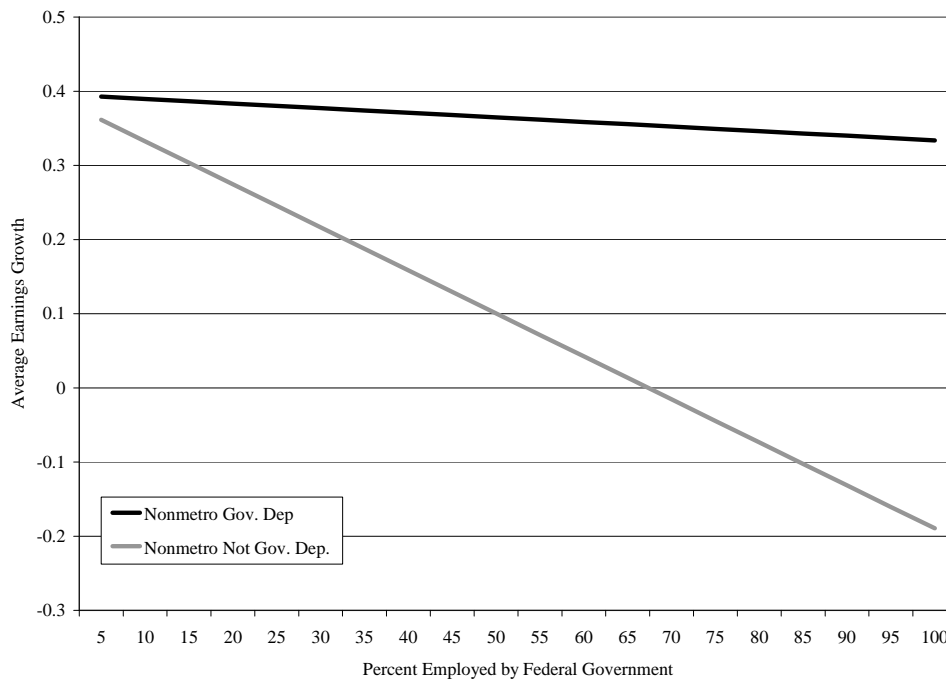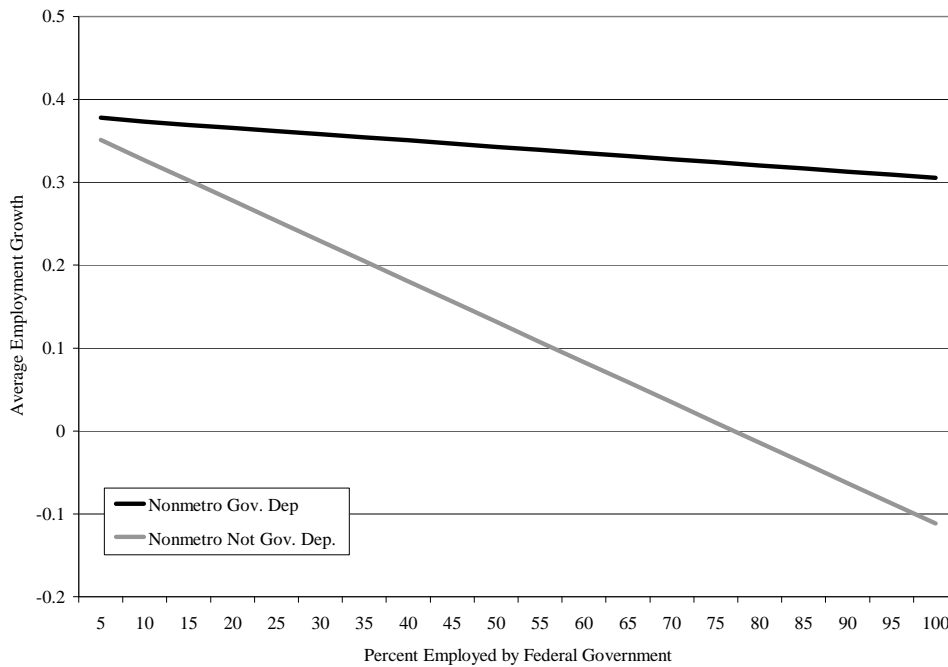

Figure 8. The Effects of Federal Employment on Employment Growth for Nonmetropolitan Government Dependent and Nonmetropolitan Not Government Dependent Counties

Economic Development Regression Models

The second study focuses on economic development. Dependent variables are measured for the 1999/2000 time frame. The independent variables add a time lag

(percent in poverty 1990, median family income 1989) to control for regression toward

the mean. Income inequality 1990 was not included in the inequality model due to

differences in measurement between 1990 and 2000 data sets (see Table 8)

Table 8

Variables Used for Economic Development Models

Type	Description	Mean	Standard Deviation
Dependent Variables	Median Family Income 1999/00	35325.588	8830.43
	Proportion of Pop in Poverty 1999/00	14.143	6.532
	Gini for Income Inequality 1999/00	0.404	0.028
Public Sustenance Structures	Avg. Federal Procurement/Defense Spending 1998	495.101	2083.94
	Avg. Federal Public Investment Spending 1998	240.321	485.192
	1999 % Total Federal Employment	1.348	1.928
	1999 % Total State/Local Employment	13.493	5.229
	1999 % Military Employment	1.203	2.998
	Government Dependent- 25% or more of total income	0.079	0.269
Controls	Population Change 1990-2000	0.097	0.133
	% Urban 2000	39.498	30.49
	Metropolitan (dummy)	0.263	0.44017
	Time lag: Poverty 1990	0.167	0.079
	Time lag: Med. Fam. Income 1989	28225.879	6923.59
	Farming dependent (dummy)	0.173	0.378
	Mining dependent (dummy)	0.045	0.207
	% Manufacturing 1999	13.603	9.255
	% Adults HS Degree + 2000	60.585	9.614
	Age: % 65+ 2000	14.781	4.15
	Region: south/nonsouth	0.383	0.486
	% Female Headed Households 2000	6.761	1.999
	Spatial lag		
Interaction Variables	% Military Employment*Gov Dep Nonmetro County	0.208	1.905
	% Federal Employment* Gov Dep Nonmetro County	0.242	1.412

The regression analysis for proportion of population in poverty shows that three

out of the six public sustenance variables have a significant effect on the county poverty

rate (see Table 9). The three variables include the percent employed by the federal government which actually increases poverty, as does the percent employed by the state and local government.

Table 9

Regression Estimates for Poverty Model, N=2393

	Poverty	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1998	-5.383E-05 *	2.092E-05
Avg. Federal Public Investment Spending 1998	6.582E-05	1.101E-04
1999 Percent of Total Federal Employment	0.124 ***	0.027
1999 Percent Total State/Local Employment	0.060 ***	0.010
1999 Percent Military Employment	-0.026	0.017
Nonmetro Government Dependent	-0.148	0.180
Controls		
Poverty 1990	54.525 ***	1.091
Population Change 1990-2000	-2.450 ***	0.413
% Urban 2000	0.009 ***	0.002
Metropolitan (dummy)	-0.482 ***	0.124
Farming dependent (dummy)	0.195	0.143
Mining dependent (dummy)	0.468 *	0.220
% Manufacturing 2000	-0.013 *	0.006
% Adults HS Degree + 2000	-0.063 ***	0.007
% Female Headed Households 2000	0.505 ***	0.030
Age: % 65+ 2000	-0.058 ***	0.014
Region: south/nonsouth	-0.850 ***	0.121
Spatial Lag	0.339 ***	0.025
		$R^2 = 0.90$

*$p<.05$, **$p<.01$, ***$p<.001$

However, as Table 9 shows, average federal procurement and defense spending has a significant but negative effect on the proportion of the population in poverty. In addition, being a government dependent nonmetropolitan county does not make a difference in poverty when controlling for other public sustenance structures, a result seen again in the income inequality model presented in Table 10.

Table 10

Regression Estimates for Income Inequality Model, N=2366

	Inequality	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1998	-5.557E-07 ***	1.649E-07
Avg. Federal Public Investment Spending 1998	4.925E-07	8.673E-07
1999 Percent of Total Federal Employment	1.747E-04	2.110E-04
1999 Percent Total State/Local Employment	1.778E-04 *	7.906E-05
1999 Percent Military Employment	-0.001 ***	1.371E-04
Nonmetro Government Dependent	0.001	0.001
Controls		
Population Change 1990-2000	-0.024 ***	0.003
% Urban 2000	6.849E-05 ***	1.552E-05
Metropolitan (dummy)	-0.008 ***	0.001
Farming dependent (dummy)	-0.002	0.001
Mining dependent (dummy)	-0.002	0.002
% Manufacturing 2000	-3.020E-04 ***	4.438E-05
% Adults HS Degree + 2000	-2.176E-04 ***	5.128E-05
% Female Headed Households 2000	0.005 ***	2.337E-04
Age: % 65+ 2000	0.001 ***	1.124E-04
Region: south/nonsouth	-0.003 **	0.001
Spatial Lag	1.066 ***	0.038
		$R^2 = 0.68$

*p<.05, **p<.01, ***p<.001

The result for income inequality show that percent of military employment has a significant negative effect on inequality, as does federal procurement and defense spending. Yet the percent employed in state and local government still has a significant and positive effect on inequality, indicating that the higher the percent employed in state and local government the higher the amount of inequality in an area (see Table 10). Again, being a government dependent nonmetropolitan county was not statistically significant when controlling for other public sustenance structures.

The analysis for median family income shows that five out of six public sustenance variables are significant. Percent employed by federal government as well as percent employed by state and local government has a significant, negative effect on median family income. Percent employed by the military had a significant and positive effect. Federal procurement and defense spending also had a significant and positive effect on median family income. Interestingly, unlike the previous models being a nonmetropolitan government dependent county had a significant effect on median family income. As Table 11 shows, nonmetropolitan government dependent counties raises median family income by $434. The significant effect of being a government dependent nonmetropolitan county suggests possible concentration effects of federal employment in nonmetropolitan counties, at least in relation to median family income.

While nonmetropolitan government dependent county was not significant in two of the models, there seems to be possible concentration effects. The possibility of these are tested further for all economic development dependent variables.

Table 11

Regression Estimates for Median Family Income Model, N=2366

	Income	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1998	0.142 ***	0.025
Avg. Federal Public Investment Spending 1998	-0.197	0.129
1999 Percent of Total Federal Employment	-184.228 ***	31.531
1999 Percent Total State/Local Employment	-95.293 ***	11.905
1999 Percent Military Employment	43.313 *	20.956
Nonmetro Government Dependent	434.345 *	211.121
Controls		
Med Family Income 1989	0.904 ***	0.018
Population Change 1990-2000	10263.000 ***	494.690
% Urban 2000	-13.001 ***	2.342
Metropolitan (dummy)	770.348 ***	150.391
Farming dependent (dummy)	663.139 ***	166.976
Mining dependent (dummy)	-505.031	257.975
% Manufacturing 2000	3.163	6.487
% Adults HS Degree + 2000	62.439 ***	8.946
% Female Headed Households 2000	-540.191 ***	33.964
Age: % 65+ 2000	-166.216 ***	17.834
Region: south/nonsouth	487.871 ***	139.384
Spatial Lag	0.271 ***	0.021
		$R^2 = 0.93$

*p<.05, **p<.01, ***p<.001

The one consistent theme across the nonmetropolitan economic development models is the effect of defense related economic processes. Places with greater procurement spending and military presence had less poverty, inequality and higher median family income in the 1990s. This finding is consistent with a long line of

research in regional processes which shows the net benefits of defense spending (Hooks, 1994; Markusen et al., 1991; Markusen,1994; Nash, 1985). Regional variation in direct and indirect defense spending affected regional variations in economic performance. For example, states in the 'Gunbelt' received a disproportionate share of defense contracts and spending. Specifically, these areas included Boston (Route 128), Newport News, Virginia; Huntsville, Alabama; Houston and San Antonio, Texas; Los Angeles; Silicon Valley; and Seattle (Marsusen, 1994, p.5). In addition, southern and western states held over 50 percent of all military bases, military payroll, and over 50 percent of all Pentagon research and development (Gottdiener, 1994, p.258).

But much of this past research has assumed that the benefits accrue disproportionately to metropolitan economies (Castells, 1988; Hooks & Getz, 1998; Mencken 2004; Mencken & Singelmann, 1998). However, these data show that defense related spending represent a public sector niche that can lead to greater economic development in nonmetropolitan economies. In addition to direct payment to military and civilian personnel, the procurement of manufactured goods and services creates more value-added to local economies. For example, Mencken (2004) found that Clarke County, Alabama (a nonmetropolitan county in the southwestern corner of the state) was the home of an ACINCORP subsidiary. This company manufactured a variety of weapons systems components. The jobs were created during the military build-up of the 1980s. The facility continues to operate. The impact of the jobs on economic growth occurred in the 1980s. The impact on economic development (less poverty and inequality, more income) lasted throughout the 1990s.

Negative regression coefficients for non-defense public sustenance structure indicate several possible processes. First, it is likely that in the least developed places, federal employment is the only game in town. Those who have the federal jobs have quality employment; those who do not are still on the economic margins. At the aggregate level, this still reveals underperforming economies, with higher poverty, inequality, and lower incomes. A second explanation is that there is a potential lag effect. It could be that the impact of federal facilities that are not defense related and do not create value added to the local economy have not been in place long enough to create long term economic development. A third explanation concerns the stabilizing effect of federal employment concentration, as was found with economic growth. I test this idea with a set of interactions below.

The Effects of Control Variables

The coefficients for public sustenance structure measures are robust. The models fit very well, explaining between 68 and 93 percent of the variance in the economic development measures. The effects of the control variables are consistent with literature expectations. Population change from 1990 to 2000 is significant in all three models, it increased median family income, and decreased poverty and inequality. Percent female headed households were positive and significant for both poverty and inequality and had a negative impact of $540 on median family income. Being farming dependent increased median family income but had no effect on poverty or inequality in a county. In addition, being mining dependent led to increases in poverty but had no effect on inequality or median family income. The percent of the population over 65 decreased median family income and poverty, but increased income inequality. Finally, the percent

with greater than a high school degree negatively affected poverty and inequality and positively affected median family income.

Government Dependent Counties and Agglomeration Effects

         I re-estimated the initial models and inserted two interaction variables for each of the economic development dependent variables. Looking first at the proportion of the population in poverty, the percent employed by the federal government does have a significantly different effect for nonmetropolitan counties that are government dependent and those that are not (see Table 12). The data show that federal employment increases poverty in both county types, but at a much faster rate in non-government dependent counties (see Figure 9).
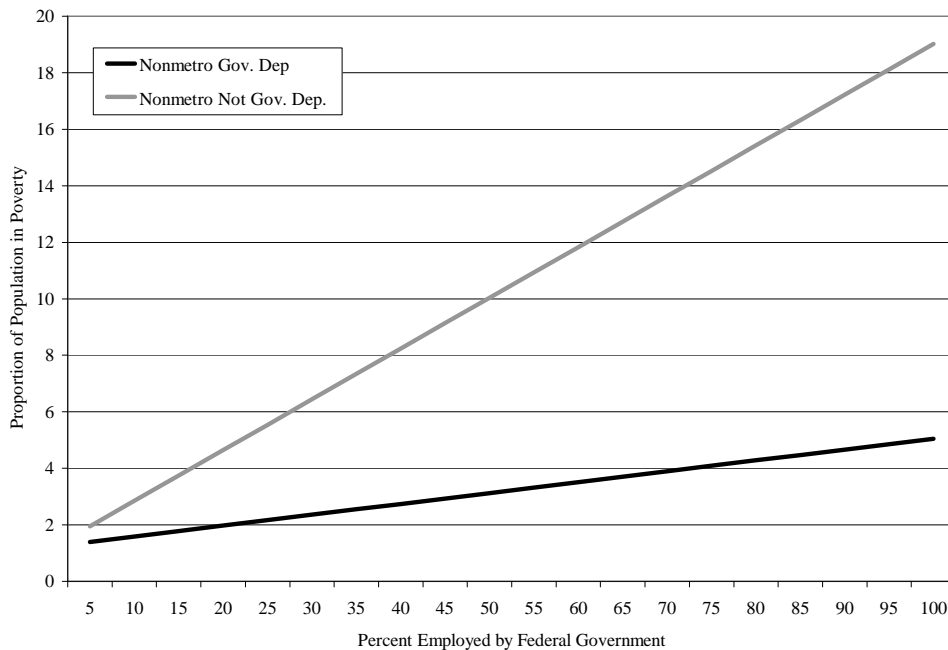
Figure 9. The Effects of Federal Employment on Poverty for Nonmetropolitan Government Dependent and Nonmetropolitan Not Government Dependent Counties

Table 12

Regression Estimates for Poverty with Interactions, N=2393

	Poverty	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1998	-0.001 *	2.091E-05
Avg. Federal Public Investment Spending 1998	5.865E-05	1.099E-04
1999 Percent of Total Federal Employment	0.180 ***	0.034
1999 Percent Total State/Local Employment	0.056 ***	0.010
1999 Percent Military Employment	-0.032	0.025
Nonmetro Government Dependent	0.152	0.212
Controls		
Poverty 1990	54.496 ***	1.090
Population Change 1990-2000	-2.479 ***	0.412
% Urban 2000	0.009 ***	0.002
Metropolitan (dummy)	-0.502 ***	0.124
Farming dependent (dummy)	0.182	0.143
Mining dependent (dummy)	0.460 *	0.220
% Manufacturing 2000	-0.013 *	0.006
% Adults HS Degree + 2000	-0.064 ***	0.007
% Female Headed Households 2000	0.499 ***	0.030
Age: % 65+ 2000	-0.059 ***	0.014
Region: south/nonsouth	-0.842 ***	0.121
Spatial Lag	0.339 ***	0.025
Interaction Variables		
FedEmp * Nonmetro Government Dependent	-0.141 **	0.050
MilEmp * Nonmetro Government Dependent	0.013	0.033
		$R^2 = 0.90$

*p<.05, **p<.01, ***p<.001

I estimated the same models for income inequality. The model with interaction

effects is presented in Table 13. No interactions were present.

Table 13

Regression Estimates for Income Inequality with Interactions, N=2393

	Inequality	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1998	-5.474E-07 ***	1.650E-07
Avg. Federal Public Investment Spending 1998	4.567E-07	8.675E-07
1999 Percent of Total Federal Employment	4.197E-04	2.654E-04
1999 Percent Total State/Local Employment	1.670E-04 *	7.968E-05
1999 Percent Military Employment	-0.001 ***	1.972E-04
Nonmetro Government Dependent	0.002	0.002
Controls		
Population Change 1990-2000	-0.024 ***	0.003
% Urban 2000	6.867E-05 ***	1.554E-05
Metropolitan (dummy)	-0.008 ***	0.001
Farming dependent (dummy)	-0.002	0.001
Mining dependent (dummy)	-0.002	0.002
% Manufacturing 2000	-2.996E-04 ***	4.441E-05
% Adults HS Degree + 2000	-2.213E-04 ***	5.133E-05
% Female Headed Households 2000	0.005 ***	2.344E-04
Age: % 65+ 2000	0.001 ***	1.124E-04
Region: south/nonsouth	-0.003 **	0.001
Spatial Lag	1.068 ***	0.038
Interaction Variables		
FedEmp * Nonmetro Government Dependent	-0.001	3.985E-04
MilEmp * Nonmetro Government Dependent	1.621E-04	2.630E-04
		$R^2 = 0.68$

*p<.05, **p<.01, ***p<.001

The interaction models for median family income are similar to the poverty models (see Table 14). The effect of federal employment on median family income in non-government counties is -$270. Table 14 shows that the interaction effect is significant and positive, $212. Yet, the difference between the slopes is still negative indicating that there is still a negative effect of federal employment on median family income even in areas where federal employment is highly concentrated.

However, in government dependent counties, federal employment concentration makes up some of the income gap that public sustenance structures create. The percent employed by the federal government has a significantly different effect for nonmetropolitan counties that are government dependent and those that are not. Federal employment concentration reduces median family income but not as much in government dependent nonmetropolitan counties.

These counties still lag behind, but there is a stabilizing effect of federal employment in government dependent counties. The greater the employment, the more stable the economy- it keeps pace with non-government dependent counties in terms of economic growth and development. But there is no net advantage. Government employment, especially non-defense employment, does not create more growth or development. In its highest levels of concentration, it appears to keep some counties from falling further behind. See Figure 10 for visual depiction.

Table 14

Regression Estimates for Median Family Income with Interactions, N=2366

	Income	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1998	0.139 ***	0.025
Avg. Federal Public Investment Spending 1998	-0.185	0.129
1999 Percent of Total Federal Employment	-270.086 ***	39.527
1999 Percent Total State/Local Employment	-91.264 ***	11.966
1999 Percent Military Employment	68.584 *	29.832
Nonmetro Government Dependent	42.583	248.706
Controls		
Med Family Income 1989	0.903 ***	0.018
Population Change 1990-2000	10302.000 ***	493.669
% Urban 2000	-13.089 ***	2.339
Metropolitan (dummy)	787.503 ***	151.097
Farming dependent (dummy)	684.763 ***	166.721
Mining dependent (dummy)	-488.957	257.428
% Manufacturing 2000	2.436	6.476
% Adults HS Degree + 2000	64.081 ***	8.939
% Female Headed Households 2000	-531.398 ***	33.973
Age: % 65+ 2000	-164.462 ***	17.802
Region: south/nonsouth	475.221 ***	139.230
Spatial Lag	0.272 ***	0.021
Interaction Variables		
FedEmp * Nonmetro Government Dependent	212.960 ***	59.135
MilEmp * Nonmetro Government Dependent	-49.615	39.073
		$R^2 = 0.93$

*p<.05, **p<.01, ***p<.001
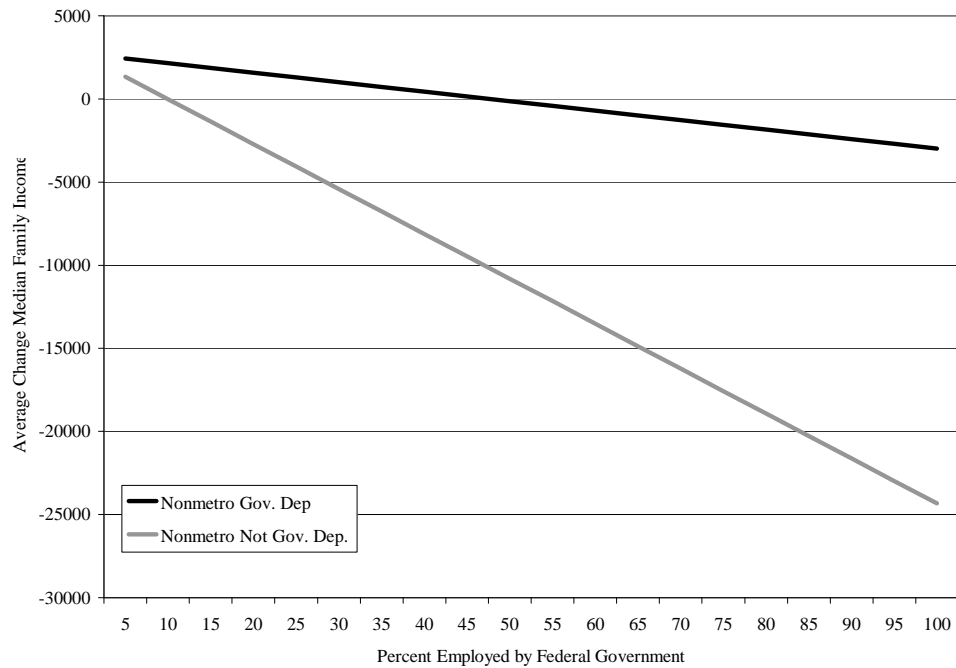
Figure 10. The Effects of Federal Employment on Median Family Income for Nonmetropolitan Government Dependent and Nonmetropolitan Not Government Dependent Counties

Federal Employment: A Curvilinear Effect

Per Hypothesis Three, I estimated a curvilinear model with percent federal employment as a quadratic variable. The purpose of this was to see if there was a 'tipping' point at which federal employment concentration created less (or more) development. The quadratic variable is significant for the proportion of county in poverty and median family income but not statistically significant for inequality in a county (see Tables 15 and 16). By calculating the effects of federal employment one can see that the percent of federal employment increases poverty up to about 22 percent of a county employed in federal employment in which case it then starts to reduce poverty. For median family income, the percent employed in the federal government begins to

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have a positive effect is roughly around 25 percent employed by federal government. I

return to this finding in the conclusion.

Table 15

Regression Estimates for Curvilinear Poverty Model, N=2393

	Poverty	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1998	0.000 *	0.000
Avg. Federal Public Investment Spending 1998	0.000	0.000
1999 Percent of Total Federal Employment	0.232 ***	0.042
1999 Percent Total State/Local Employment	0.059 ***	0.010
1999 Percent Military Employment	-0.417 *	0.018
Nonmetro Government Dependent	-0.188	0.180
Controls		
Poverty 1990	54.445 ***	1.089
Population Change 1990-2000	-2.486 ***	0.412
% Urban 2000	0.009 ***	0.002
Metropolitan (dummy)	-0.487 ***	0.124
Farming dependent (dummy)	0.174	0.143
Mining dependent (dummy)	0.454 *	0.220
% Manufacturing 2000	-0.122 *	0.006
% Adults HS Degree + 2000	-0.647 ***	0.007
% Female Headed Households 2000	0.498 ***	0.030
Age: % 65+ 2000	-0.590 ***	0.014
Region: south/nonsouth	-0.811 ***	0.121
Spatial Lag	0.335 ***	0.025
Quadratic Variable		
FedEmp * FedEmp	-0.005 ***	0.002
		$R^2 = 0.90$

*p<.05, **p<.01, ***p<.001

Table 16

Regression Estimates for Curvilinear Median Family Income Model, N=2366

	Income	Standard Error
Public Sustenance Structures		
Avg. Federal Procurement/Defense Spending 1998	0.131 ***	0.025
Avg. Federal Public Investment Spending 1998	-0.181	0.129
1999 Percent of Total Federal Employment	-308.926 ***	49.087
1999 Percent Total State/Local Employment	-95.111 ***	11.880
1999 Percent Military Employment	61.121 **	21.593
Nonmetro Government Dependent	481.802 *	211.192
Controls		
Med Family Income 1989	0.903 ***	0.018
Population Change 1990-2000	10309.000 ***	493.835
% Urban 2000	-12.799 ***	2.338
Metropolitan (dummy)	774.634 ***	150.079
Farming dependent (dummy)	690.283 ***	166.824
Mining dependent (dummy)	-485.926	257.495
% Manufacturing 2000	1.673	6.489
% Adults HS Degree + 2000	63.901 ***	8.938
% Female Headed Households 2000	-528.330 ***	34.081
Age: % 65+ 2000	-165.397 ***	17.798
Region: south/nonsouth	450.162 **	139.555
Spatial Lag	0.269 ***	0.021
Quadratic Variable		
FedEmp * FedEmp	6.121 ***	1.849
		$R^2 = 0.93$

*p<.05, **p<.01, ***p<.001

Case Study Harrison County

The final study is a case study of Harrison County, West Virginia. This study focuses on Harrison County and surrounding counties to analyze regional processes in light of the opening of the headquarters of the FBI's Criminal Justice Information Systems division in 1992. Harrison County is one of 407 counties that make up the politically defined Appalachia region which has had a historically lagging economy. Since President Johnson created the Appalachian Regional Commission (ARC) in 1964, and the 1965 Appalachian Regional Development Act, there has been a large amount of federal investments into the region for human capital, social capital, public works, and built environment. As a whole there have been improvements across the Appalachian region including 2,100 miles of roads and $14 billion federal dollars for public and social infrastructure focused on economic development in the region (Mencken & Tolbert, 2005).

In the 1970s, for example, the percent of families living in poverty declined and population and income increased. The region also saw a reversal in the 1980s with poverty growing by almost 9 percent, and population decline (Mencken, 1997). The successes have not been homogeneous across the region. While some counties have improved, the distribution of federal spending has not been distributed equally throughout the Appalachian counties (Mencken, 2000).

However, the nonmetropolitan county of Harrison, West Virginia has received a large amount of federal investments via the Federal Bureau of Investigation's Criminal Justice information Services Division complex located in Clarksburg, which makes it a unique opportunity to investigate my research question. As of the 2000 Census of

Population and Housing, Harrison County was home to 68,652 people. Harrison County

is predominantly white (96.6 percent). The Census reports about 13.6 percent of families

and 17.2 percent of the population were below the poverty line in 2000. Harrison County

does have a local economic development agency called Harrison County Development

Authority (HCDA) whose purpose is to "promote, develop and advance the business

prosperity and economic welfare of Harrison County, West Virginia and the various

incorporated communities within the county."

Clarksburg is the county seat of Harrison County and has a population of 16,743

(Census 2000). Clarksburg was historically an industrial and manufacturing center for

glass as well as coal. However, since 1995 it has become the location of the largest

division of the FBI, the Federal Bureau of Investigation's Criminal Justice Information

Services Division. The implementation of the FBI division in Clarksburg during the

1990s presents unique opportunity to examine my research question, the impact of

federal spending in a nonmetropolitan county at two different points of time, 1990 and

2000. The FBI complex takes up approximately 985 acres and provides more than 3000

jobs to West Virginia (National Mining Association).

Below I present descriptive statistics of Harrison County in 1990 and 2000 on

population growth and the main economic growth and development variables used

throughout this study. I also include the counties immediately surrounding Harrison

County to capture spillover from such a large facility. Included in all tables are also

comparison counties from the region (see Figure 11).

Figure 11. Counties Used in Case Study Analysis

The comparison of population in Table 17 is shown primarily to demonstrate one of the criteria used to find comparison counties (used along with poverty rate and median family income). It is important to find counties of similar size, not just economic development characteristics. I have two counties for comparison with Harrison County, Belmont, Ohio and Wood, West Virginia. Both Harrison and Belmont counties saw decreases in population from 1990 to 2000 while Wood County, as well as West Virginia as a whole, saw an increase in population. The smaller counties surrounding Harrison did see increases in population far above the state as a whole; however, the comparison for Taylor, home to the city of Grafton West Virginia, was the county with largest percent of population increase. However, its comparison county, Jackson, Ohio, also increased with a percent change of nearly 8 percent. Doddridge County also saw a high percent change

in population from 1990 to 2000, while its comparison county, Pocahontas, West

Virginia, only saw an increase of 1.37 percent. Doddridge may be catching some of the

spillover growth from surrounding larger areas as it is halfway between Clarksburg and

Parkersburg allowing residents to easily commute both ways.

Overall, looking at Harrison and surrounding counties, the FBI facility did not

seem to increase overall population. This finding is in contrast to earlier research by

Bartik (1993) who argued that 80 percent of new jobs typically go to in-migrants. These

data show that the federal jobs went most likely to local residents, given the lack of in-

migration during the 1990s.

Table 17

Population Growth

	Study Area				Comparison Counties		
	1990	2000	% Change		1990	2000	% Change
Harrison	69,371	68,652	-1.04	Belmont, OH	71,074	70,226	-1.19
				Wood, WV	86,915	87,986	1.23
Surrounding Counties							
Doddridge	6,994	7,403	5.85	Pocahontas, WV	9,008	9,131	1.37
Taylor	15,144	16,089	6.24	Jackson, OH	30,230	32,641	7.98
Barbour	15,699	15,557	-0.90	Roane, WV	15,120	15,446	2.16
Lewis	17,223	16,919	-1.77	Monroe, OH	15,497	15,180	-2.05
Wetzel	19,258	17,693	-8.13	Jackson, WV	25,938	28,000	7.95
Upshur	22,867	23,404	2.35	Mason, WV	25,178	25,957	3.09
Marion	57,249	56,598	-1.14	Venango, PA	59,381	57,565	-3.06
West Virginia	1,793,477	1,808,344	0.83				

I included economic growth variables for employment and earnings. I used the

same variables I used in the regression analysis, which was the growth in earnings and

employment from 1993 to 1998. Table 18, shows the results for the growth variables.

Table 18

Earnings and Employment Growth

	Study Area : % Change 1993-1999			Comparison Counties: % Change 1993-1999	
	Earnings	Employment		Earnings	Employment
Harrison	15.99	17.42	Belmont, OH	14.73	13.19
			Wood, WV	6.72	6.65
Surrounding Counties					
Doddridge	19.52	18.57	Pocahontas, WV	9.12	11.26
Taylor	1.77	5.14	Jackson, OH	15.76	13.34
Barbour	6.76	6.98	Roane, WV	3.11	7.10
Lewis	3.33	2.41	Monroe, OH	1.59	4.49
Wetzel	-2.36	-5.86	Jackson, WV	12.52	15.18
Upshur	9.59	12.12	Mason, WV	-1.54	-0.53
Marion	9.89	9.34	Venango, PA	6.15	5.66
West Virginia	6.15	6.99			

One can see that Harrison had similar growth as Belmont, Ohio and outpaced both Wood and West Virginia as a whole in both earnings and employment. Doddridge stands out as having particularly high growth in both earnings and employment. As seen above in looking at population change and below in the development analysis below, Doddridge often stands out as appearing to absorb spillover effects due to its location. Economic growth appears to be a strong, by product of the FBI center.

Now moving into the economic development variables, Table 19 shows the results of change in median family income for all counties. Harrison had a median family income of almost $25,250 in 1990 and that increased to $30,560 by 2000, a percent change of 21 percent. This gain was greater than the state as a whole as well as its comparison counties of Belmont and Wood. When looking at surrounding counties, there are mixed results of performance increasing more or less than comparison counties and the state as a whole. And although the increase in Harrison County was more than the comparison city and the state, it is not high in comparison to the rest of the country

especially controlling for inflation. Also it is important to mention that other counties (both surrounding and comparison counties) in West Virginia also faired better than the state as a whole, which does seem to point to the economic benefit of the federal facility.

Table 19

Median Family Income

	Study Area				Comparison Counties		
	1990	2000	% Change		1990	2000	% Change
Harrison	$25,245	$30,562	21.06	Belmont, OH	$25,945	$29,714	14.53
				Wood, WV	$30,582	$33,285	8.84
Surrounding Counties							
Doddridge	$19,830	$26,744	34.87	Pocahontas, WV	$20,595	$26,401	28.19
Taylor	$22,357	$27,124	21.32	Jackson, OH	$22,611	$30,661	35.60
Barbour	$19,106	$24,729	29.43	Roane, WV	$17,898	$24,511	36.95
Lewis	$22,273	$27,066	21.52	Monroe, OH	$24,162	$30,467	26.09
Wetzel	$28,122	$30,935	10.00	Jackson, WV	$25,121	$32,434	29.11
Upshur	$22,267	$26,973	21.13	Mason, WV	$24,125	$27,134	12.47
Marion	$25,963	$28,626	10.26	Venango, PA	$27,161	$32,257	18.76
West Virginia	$23,725	$28,333	19.42				

The percent of the population in poverty was also measured for both 1990 and 2000 presented in Table 20. In this comparison we see that Harrison County has essentially remained the same, decreasing just 1 percent, much like Wood County, where Belmont County decreased over 16 percent and the state as a whole decreased nearly 11.5 percent. The surrounding counties seemed to have higher rates of decrease in the percent of the population in poverty yet comparison counties, excluding Wood, also had far higher percentages of decrease than Harrison County. Again, drawing the conclusion that Harrison County, at least in the area of economic development measured by poverty, does not seem to be reaping benefits from the FBI facility. These benefits appear to be going to nearby Doddridge and Taylor Counties, where population grew, median family income increased, and poverty decreased. There appears to have been a substitution effect. The jobs that were created by the FBI facility, both in the complex and multiplier

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jobs in private industry, went to people who were previously employed in other jobs. While the facility appears to have had a positive net effect on median family income, it did not 'trickle down' to reduce poverty in the host county. Perhaps the data will tell a different story at another point in time, but as of the 2000 Census, there was no effect on those who needed it the most- those trapped in the clutches of Appalachian poverty.

Table 20

Percent of Population in Poverty

	Study Area				Comparison Counties		
	1990	2000	% Change		1990	2000	% Change
Harrison	17.38	17.20	-1.02	Belmont, OH	17.42	14.58	-16.30
				Wood, WV	14.14	13.85	-2.05
Surrounding Counties							
Doddridge	22.97	19.81	-13.76	Pocahontas, WV	21.19	17.14	-19.10
Taylor	22.88	20.30	-11.29	Jackson, OH	24.19	16.47	-31.93
Barbour	28.53	22.56	-20.93	Roane, WV	28.11	22.61	-19.55
Lewis	23.68	19.94	-15.78	Monroe, OH	21.49	13.90	-35.30
Wetzel	20.53	19.80	-3.57	Jackson, WV	20.03	15.24	-23.95
Upshur	21.19	20.01	-5.56	Mason, WV	22.07	19.93	-9.70
Marion	18.90	16.31	-13.70	Venango, PA	15.08	13.39	-11.18
West Virginia	21.56	19.08	-11.49				

CHAPTER FOUR

Conclusion

This is the first study to systematically examine the effects of public sustenance structures on economic growth and development. Historically, human ecology research has treated federal processes as an anathema (see Frisbie & Kasarda, 1988; Hooks, 1994; Kasarda & Irwin, 1991; Smith, 1995). And while the role of the state has been prominent in political economy based research (Feagin, 1988; Hooks, 1994; Smith, 1995), these studies are typically case studies of places. There are very few attempts at systematic analyses.

One of the primary ideas driving this research was that public sustenance structures can 'save' nonmetropolitan economies in the clutches of deindustrialization. Among these counties, having more government jobs was a good thing because unlike most private sector jobs that nonmetropolitan economies attract, they pay better and cannot be readily outsourced to cheaper labor markets. I proposed that the implication of this was that nonmetropolitan economies that had more federal jobs would perform better in terms of economic growth and development. What I find is just the opposite: these counties actually performed worse. This finding is consistent with the naysayers from human ecology, who predicted that state involvement crowds out private activity, and limits growth due to bureaucratized procedures and policies that must be followed in order to create jobs and increase pay.

However, my analysis did reveal an agglomeration effect, of sorts. In the private economy, agglomeration is a good thing in that if economies of scale are achieved and

productivity is achieved on an exponential, as opposed to an arithmetic, curve. In my

analysis I show that a high concentration of federal facilities can affect local growth and

development through stabilization. Federal employment stabilizes growth and

development in government dependent counties. Such counties do not fall further behind

during economic expansions. Nonmetropolitan economies with limited federal presence

lagged behind during the 1990s.

The results of this study have major policy implications. As Hooks (2003) notes,

facility chasing has replaced smokestack chasing in nonmetropolitan America.

Nonmetropolitan communities are lobbying for government jobs to bolster local

economies, and federal prisons appear to be the most sought after. Yet, it takes an

overconcentration of such facilities (greater than 25 percent of all local earnings) to have

even a marginal positive effect. Not every county can employ over 25 percent of its labor

force with the government. Bringing a federal facility to a town is not going to create

the economic boom that some anticipate. The lesson from Clarksburg, West Virginia,

which won the lottery of federal facilities relocation, is that the effects tend to be

dispersed widely. Harrison County, the home of the FBI center, did not benefit

tremendously during the 1990s. Those on the other end of the economic development

hierarchy, those who make the decisions about where to place these valuable

commodities, need to understand that short and long term economic impact is not likely

to be something that is easily quantifiable. In other words, moving federal jobs out of the

greater Washington, DC area into nonmetropolitan America will not bring the type of

development to nonmetropolitan communities that policymakers envision.

This study has been grounded in the changes occurring in nonmetropolitan America over the past few decades as well as sociological theories of development of place. It has implications beyond where to locate federal facilities. One of the major changes affecting nonmetropolitan America has been the fluctuation in population throughout the 1970s, 1980s and 1990s, where there were notable increases and decreases in population in nonmetropolitan areas. While some places tended to gain more than others, this analysis was done over a decade where many nonmetropolitan areas saw significant increases in population. Understanding population trends surrounding the time of analysis is important as some of the most essential changes that drive socioeconomic performance are due to changes in population.

In this study I found population change in previous decades as well as the decade of analysis (1990-2000) were significant in models of economic growth and development. The control for population growth from 1980 to 1990 positively affected both employment growth and earnings growth from 1990 to 2000 indicating that past population growth is very much a predictor of future population growth in that those places with built environment conducive to growth in the past have resources to support future growth. Also, I found that 1990 to 2000 population growth had significant effects of development measures, decreasing poverty and inequality and increasing median family income. Human ecology perspective recognizes population and its size as key factors in the development of place and social change, and new urban sociology certainly indicates that the history of population growth of an area is important (Smith, 1995).

When analyzing federal facilities specifically, the finding that previous growth in population leads to significant growth in employment and earnings shows that inserting

government facilities will not create more resources, net of what currently exists. The public sector can create jobs. The results of this analysis show, however, that having more employed in such jobs (higher federal employment) is not indicative economic growth. In fact, it is negatively correlated with growth except in those areas that are highly government dependent.

Nonmetropolitan counties have also undergone significant economic restructuring as well as population changes over the last several decades. The 1970s were a time of decentralization of manufacturing leading to new economic activity for nonmetropolitan areas as manufacturing went in search of cheaper labor, tax rates, and energy prices. Starting in the 1980s nonmetropolitan counties began to lose manufacturing jobs to cheaper labor overseas as nonmetropolitan economies began to integrate into the world system of competition. During the 1980s, the positive economic effect of manufacturing concentration did not reverse in nonmetropolitan economies; it remained positive but was diminished (Mencken & Singelmann, 1998). However, this analysis finds that higher percentage of manufacturing decreases earnings growth and employment growth during the 1993-1998 business cycle and had virtually no effect on economic development (poverty, inequality, median family income). Policies which seek to recruit more manufacturing enterprises appear destined to fail. This is an important finding because much of federal policy (i.e. the Appalachian Regional Commission; Mississippi Delta Authority) propose shortening the distance between plants and markets with increased infrastructure and highway investment.

Traditionally in nonmetropolitan economies sustenance activities have included manufacturing, mining, and farming. I have discussed manufacturing above; farming

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tends to be mostly insignificant in the models except for income inequality and median family income where being a farming dependent county has a negative effect on income inequality and a positive effect on median family income. Being a mining dependent county is negatively correlated with economic growth, increases poverty, decreases median family income, and has no effect on inequality. The findings of these three sustenance activities were not surprising and have been studied more in depth in nonmetropolitan counties. What has been overlooked is the effect of public sustenance structures in nonmetropolitan counties. This study is a first in remedying this situation.

Some studies have found that some types of public sector employment decreases income inequality and promote income growth or at worst do not deter it (Lobao, 1990; Lobao & Hooks, 2003). Yet, Mencken and Tolbert (2004) found that federal salary spending increased income inequality in Appalachia. While government facilities may have less impact on inequality in metro areas where there is far more diversity of economic activity, higher paying jobs by federal facilities can divide nonmetropolitan economies into those with these relatively well-paying government jobs verses those that have the remaining jobs, which may pay substantially less leading to higher inequality (Billings & Blee, 2000; Duncan, 1999, 1992). However, my study fails to show systematic consequences for income inequality. While federal facilities do not reduce income inequality, they do not appear to increase it in nonmetropolitan economies.

Finally, my last hypothesis predicts that at a certain point of increased public sustenance structures, income inequality will begin to decrease due to a large proportion of the population being employed in relatively well paying and stable jobs. In this model I added a squared variable for percent federal employment to determine a tipping point

for the effects of federal employment on poverty, median family income, and inequality. I found that the variable was significant only for poverty and median family income, not for inequality. Therefore, I reject my original hypothesis about inequality but retain the interesting findings about poverty and median family income. The models indicate that the percent of federal employment increases poverty up to about 22 percent of a county employed in federal employment at which point it begins to reduce poverty levels. For median family income, the percent employed in federal government begins to show a positive effect at roughly 25 percent. This is an interesting finding as we did not see any significant relationship between nonmetropolitan government dependent and the economic development variables. This may be due to the curvilinear nature of the variables. In fact, it also may be why federal employment and government dependent were significant for poverty and median family income when entered as an interaction variable as well. It seems that at a high enough percent of federal employment (not just income from the government) there are some positive economic development results for nonmetropolitan counties mainly in the reduction of poverty and increased income. But again, can each county, as a matter of policy, put 25 percent of its labor force on the federal payroll?

Overall, this research points towards one final conclusion: that public sustenance structures do not have an overall positive effect on economic growth or development in nonmetropolitan economies. However, when looking at difference in nonmetropolitan government dependent counties, it can be argued that government monies do have positive effects that can act as a stabilizing force in a nonmetropolitan economy. Much like Hooks (2003) indicates in the study of federal facilities; focusing on growth can

overlook the stabilizing effects that federal facilities can have on nonmetropolitan economies. While not constantly creating new jobs, the lack of layoffs can also stabilize local economies against economic downturns as government does not often reduce employment leaving communities with at least a stable employment outlook.

I find similar findings when looking at nonmetropolitan government dependent counties and economic growth and development. While public sustenance structures do not seem to bring in the same effect as manufacturing activity did in past decades, for nonmetropolitan economies they may act as a force of stabilization rather than growth.

Implications

As mentioned briefly above, these findings have major implications for nonmetropolitan communities. First, it is important to mention that this analysis is focused on economic growth and development. The results indicate that public sustenance activities do not add to growth even at high levels of concentration, although they can help to reduce decline and add to the stability of an area. Also, while not adding to growth, that does not mean that nonmetropolitan communities did not grow. In other words, the negative effect of public sustenance structures does not automatically mean that they deter other positive effects in the area.

Each county economic development committee may have different goals for their area. While some nonmetropolitan communities are actively seeking growth, it is certainly an overstatement to say that they all are. In fact, many would like to maintain their current size and community, clinging to the small town atmosphere familiar and desired by many. For those communities, what this analysis shows is that public

sustenance, at higher concentrations, can provide stable, well paying jobs that keep a community from falling further behind but at the same time not promoting growth.

Yet for those nonmetropolitan economic development committees seeking growth, the results of this analysis indicate that facilities chasing will not produce the same results once seen with smoke stack chasing in previous decades. If a county is looking for opportunities for federal employment, past research has found that the type of facility is important (Hooks & Getz, 1998; Hooks, 2003, Hooks, 2004). High-tech facilities can spur spinoff activity often creating growth. But low-tech facilities, such as prisons, tend to crowd out other private sector growth. However, looking systematically at the overall effect of public sustenance structures, my research shows a widespread negative effect on economic growth. Therefore, facilities chasing will not bring about the growth and development hoped for or seen with previous private sustenance structures. In addition, an area must recruit a high percentage of employment in public sector to see stabilizing effects for growth and development.

Furthermore, the results of the case study seem to point to widespread effects throughout a region, not necessarily to benefits for the host county. This may be due to the need for a larger or more educated labor force than the host county can provide, as well as the willingness of workers to drive long distances and the reluctance to relocate solely based on that job. Nonmetropolitan communities are all too familiar with the challenge of providing additional pull factors to draw people in as well as infrastructure that allows for relocation. Thus, one could imagine that the effects of a large facility such as that seen in Harrison County, WV remain spread out among several counties. While not specifically studied here, it is recognized that nonmetropolitan counties face

challenges beyond simply recruiting industry; challenges that affect recruitment in the public sector as well as the private.

With that being said, a community that has replaced smoke stack chasing with facilities chasing should be conscious of the lack of growth and development stimulated solely by public sustenance activity as well as aware of the positive stabilizing effects it may have for nonmetropolitan communities in a time of increased competition, globalization, technology, and change.

BIBLIOGRAPHY

Albrecht, D. E. (1993). The renewal of population loss in the nonmetropolitan great plains. *Rural Sociology,* 58(2), 233-246.

Anselin, L. (1996). Simple Diagnostic Tests for Spatial Dependence. *Regional Science and Urban Economics,* 26, 77-104.

Billings, D. & Blee, K. (2000). *The Road to Poverty: The Making of Wealth and Hardship in Appalachia*. Cambridge, UK: Cambridge University Press.

Block, F. (1995). The roles of the state in the economy. In N. Smelser & R. Swedberg (Eds.), *The Handbook of Economic Sociology.* Princeton, NJ: Princeton University Press.

Bound, J. & Holzer, H. J. (2000). Demand shifts, population adjustments, and labor market outcomes during the 1980s. *Journal of Labor Economics,* 18(1), 20.

Brown, D. L., Fuguitt, G. V., Heaton, T. B., & Waseem, S. (1997). Continuities in size of place preferences in the United States, 1972-1992. *Rural Sociology*, 62, 408-428.

Castells, M. (1977). *The urban question: A Marxist approach*. Cambridge, MA: Massachusetts Institute of Technology.

Cherry, T. L. & Kunce, M. (2001). Do policymakers locate prisons for economic development. *Growth and Change,* 32, 533-547.

Chevan, A. & Stokes, R. (2000). Growth in family income inequality, 1970-1990: Industrial restructuring and demographic change. *Demography*, 37, 207-29.

Cotter, D. A. (2002). Poor people in poor places: Local opportunity structures and household poverty. *Rural Sociology,* 67(4), 555-577.

Dobbin F. (2005). Is globalization making us all the same? *British Journal of Industrial Relations,* 43, 569–576.

Duncan, C. M. (1992). Persistent poverty in Appalachia: Scarce work and rigid stratification. In C. Duncan (Ed.), *Rural Poverty in America,* Westport, CT: Greenwood Publishing.

Duncan, C. M. (1999). *Worlds apart: Why poverty persists in rural America*. New Haven, CT: Yale University Press.

Eberts, P. R. (1998) POETS-PACS-LEDD: From paradigm to theory to policy in human ecological perspective. In M. Micklin & D. Poston (Eds.), *Continuities in sociological human ecology* (pp. 67-84). New York: Plenum Press.

Falk, W. W., Schulman, M., & Tickamyer, A. R. (Eds.) (2003). *Communities of Work: Rural Restructuring in Local and Global Contexts.* Athens, OH: Ohio University Press

Feagin, J. R. (1988). *The free enterprise city.* New Brunswick, NJ: Rutgers University Press.

Feenstra, R. C. (1998). Integration of trade and disintegration of production in the global economy. *The Journal of Economic Perspectives,* 12(4), 31-50.

Frisbie, W. P. & Kasarda, J. D. (1988). Spatial processes. In N.J. Smelser (Ed.), *Handbook of Sociology.* Beverly Hills: Sage.

Frisbie, W. P. & Poston, D. L. (1978). Sustenance differentiation and population redistribution. *Social Forces,* 57, 42-56.

Glasmeier, A. & Howland, M. (1995) *From combines to computers.* Albany: SUNY Press.

Goe, R. W. (1994). The producer services sector and development within the deindustrializing urban community. *Social Forces,* 72(4), 971-1009.

Gottdiener, M. (1985). *The social production of urban space.* University of Texas Press: Austin, TX.

Gottdiener, M. (1994). *The social production of urban space* (2nd ed.). Austin: University of Texas Press.

Grant, D.S. II & Wallace, M. (1994). The political economy of manufacturing growth and decline across the American states, 1970-1985. *Social Forces*, 73, 32-63.

Harvey, D. (1982). *The limits to capital.* Blackwell: Basil.

Hawley, A. (1950). *Human ecology: A theory of community structure.* New York: Ronald Press.

Hawley, A. (1986). *Human ecology: A theoretical essay.* Chicago, IL: University of Chicago Press.

Heilbroner, R. (1996). *The Making of Economic Society.* New Jersey: Prentice Hall.

Hirschl, T., Poston, D., & Frisbie, P. (1998). The effects of public and private sustenance organizations on population redistribution in New York state. In M. Micklin & D. Poston (Eds.), *Continuities in sociological human ecology* (pp. 251-266). New York: Plenum Press.

Hooks, G. (1994). Regional processes in the hegemonic nation: political, economic, and military influences on the use of geographic space. *American Sociological Review,* 59, 746-772.

Hooks, G. (2003). Military and civilian dimensions of America's regional policy. *Armed Forces & Society,* 29(2), 227-251.

Hooks, G. & Getz, V. (1998). Federal investments and economic stimulus at the end of the Cold War: The influence of federal installations on employment growth, 1970-1990. *Environment and Planning,* 30, 1695-1704.

Hooks, G., Mosher, C., Rotolo, T., & Lobao, L. (2004). The prison industry: Carceral expansion and employment in US counties, 1969-1994. *Social Science Quarterly,* 85(1), 37-57.

Huang, T., Orazem, P. F., & Wohlgemuth, D. (2002). Rural population growth, 1950-1990: The roles of human capital, industry structure, and government policy. *American Journal of Agricultural Economics,* 84(3), 615.

Irwin, M., Tolbert, C.M., & Lyson, T.A. (1999). There's no place like home: Non-migration and civic engagement. *Environment and Planning,* 31:2223-2238.

Irwin, M., Tolbert, C. M., & Lyson, T. (1997). How to build strong home towns. *American Demographics,* 19, 43-47.

Jackman, M. R. & Jackman, R. W. (1980). Racial inequalities in home ownership. *Social Forces,* 58(4), 1221-1234.

Johnson, K. M. & Beale, C. L. (1998). The rural rebound. *Wilson Quarterly,* 22(2), 16.

Johnson, K. M. & Fuguitt, G. V. (2000). Continuity and change in rural migration patterns, 1950-1995. *Rural Sociology,* 65(1), 27-49.

Kasarda, J. D. & Irwin, M. D. (1991). National business cycles and community competition for jobs. *Social Forces,* 69(3), 733-761.

Kodras, J. E. (1997). The changing map of American poverty in an era of economic restructuring and political realignment. *Economic Geography,* 73(1), 67-94.

Lobao, L. & Hooks, G. (2003). Public employment, welfare transfers, and economic well-being across local populations: Does a lean and mean government benefit the masses? *Social Forces,* 82(2), 519-556.

Lobao, L. M. (1990). *Locality and Inequality*. State University of New York Press.

Markusen, A. R. (1987). *Regions: The economics and politics of territory*. Totowa, NJ: Rowman and Littlefield.

Markusen, A. R. (1994). American federalism and regional policy. *International Regional Science Review,* 16:3-16.

Markusen, A. R., Peter, H., Campbell, S., & Deitrick, S. (1991). *The rise of the Gunbelt: The military remapping of industrial America*. Oxford University Press.

Mencken, C. F. (1997). A study of the region: Regional differences in socioeconomic well-being in Appalachia. *Sociological Focus,* 30(1), 79-97.

Mencken, C. F. (2000). Federal spending and economic growth in Appalachian counties. *Rural Sociology,* 65(1), 126-147.

Mencken, C. F. (2004). Federal defense spending and metropolitan and nonmetropolitan disparities in economic growth in the Southeast. *Social Science Quarterly,* 85(2), 324-339.

Mencken, C. F. & Singelmann, J. (1998). Socioeconomic performance in metropolitan and nonmetropolitan areas during the 1980s. *The Sociological Quarterly,* 39(2), 215-238.

Mencken, C. F. & Tolbert, C. M. (2005). Federal public investment spending and economic development in Appalachia. *Rural Sociology,* 70(4), 514-539.

Morris, M. & Western, B. (1999). Inequality in earnings at the close of the twentieth century. *Annual Review of Sociology*, 25, 623-657.

Murdock, S. H., Hoque, N., & Backman, K. (1993). Determinants of 1980 to 1990 net migration in Texas counties: The role of sustenance specialization and dominance in international ecosystem. *Rural Sociology,* 58(2), 190-209.

Myers, D. L. & Martin, R. (2004). Community member reactions to prison siting: Perceptions of prison impact on economic factors. *Criminal Justice Review,* 229(1), 115.

Nash, G.D. (1985) *The American West transformed*. Bloomington, IN: Indiana University Press.

Nelson, P.B., & Beyers, W.B. (1998). Using economic base models to explain new trends in rural income. *Growth and Change*, 29, 295-318.

Poston, D.L. (1984). Regional ecology: A macroscopic analysis of sustenance organization. In M. Micklin & H.M. Choldin (Eds.), *Sociological human ecology: Contemporary issues and applications* (pp. 323-382). Westview Press.

Tolbert, C. M., Lyson, T. A., & Irwin, M. D. (1998). Local capitalism, civic engagement, and socioeconomic well-being. *Social Forces,* 77(2), 401-428.

Vias, A.C. (2001). Re-evaluating the relationship of in-,out-, and net migration in nonmetropolitan counties: An update on Beale's u-shaped curve. *Geographical Analysis*, 228-246.

Wojan, T.R. (1998). Spatial diffusion of management practices in urban and rural areas. *Growth and Change*, 29, 319-343.