STRATEGIC INTERACTION AMONG COUNTY GOVERNMENTS
IN THE CHOICE OF LOCAL ECONOMIC DEVELOPMENT
PROGRAMS AND PUBLIC SERVICES

A Thesis
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By
Afia Boadiwaa Yamoah, B.Sc.

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Master's Examination Committee:
Dr. David S. Kraybill, Adviser
Dr. Elena G. Irwin
Dr. Linda M. Lobao

Approved by

David S. Kraybill
Adviser
Department of Agricultural, Environmental
and Development Economics
ABSTRACT

This study investigates strategic interaction among county governments in local economic development and in the provision of public services. Decentralization of welfare has given counties the added responsibility of providing income and jobs for residents. Localization of economic development and decentralization of welfare programs may intensify intergovernmental competition among local governments. County governments in the United States may act strategically by setting lower welfare benefit levels, and by offering business incentives to new firms, thus resulting in the possible under-provision of local public services.

Key objectives of this study are to implement an empirical model for measuring whether localization of economic development activities and devolution of welfare program administration leads to heightened aggressiveness of the economic development activities of county governments. Also, the study investigates whether redistributive services provided by county governments are influenced by interjurisdictional competition and other attributes of counties.

County-level data from 46 states in the United States are used in the analyses. Spatial econometric models are used to test the hypothesis that county governments choose economic development activities interdependently. The hypothesis that
devolution of welfare leads to heightened interjurisdictional competition for economic development and a race to the bottom in the provision of local public services is also tested.

The empirical analysis reveals that localization of economic development activities and devolution of welfare programs lead to heightened aggressiveness in the economic development activities of county governments. Economic development activities in one community affect the economic development activities in neighboring communities. Although there are spatial interactions between county governments in their economic development activities, devolution of welfare programs does not lead to increased aggressiveness in economic development. The results indicate that the presence of an economic development professional on staff and the existence of an industrial park lead to increased aggressiveness in economic development activities of county governments. The analysis does not show evidence of a race to the bottom in the provision of local public services.
This work is dedicated to my husband, Kwasi, for his continual love and support.
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VITA

December 26, 1975 .......................... Born - Jamasi, Ghana

1998 ................................. B.Sc. Agriculture, University of Cape Coast, Ghana


1999 - present ........................ Graduate Research Associate, The Ohio State University

PUBLICATIONS

Research Publication


FIELDS OF STUDY

Major Field: Agricultural, Environmental and Development Economics

Specialization: Regional and Community Economics
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CHAPTER 1

INTRODUCTION

1.1 Overview of problem and justification of the study

In many countries, there are multiple levels of government, each with its own duties. While some governmental services, such as national security, are provided at the federal level, other services are implemented at the state or local government levels. Over time, the duties of the various levels of government tend to change. In recent decades, many nations have shifted some of the powers and responsibilities of the central government to local governments in a process known as decentralization.

In 1996, the Congress in the United States passed welfare reform legislation that gave states authority over many aspects of welfare programs that had previously been designed and administered at the federal level. The Personal Responsibility and Work Opportunity Reconciliation Act of 1996 gave new responsibility to the states in the provision of welfare. Fifteen of the states have carried welfare program decentralization to the county level, and counties have the mandate to administer and even decide some aspects of welfare policy at that level\(^1\). The act also placed time restrictions on the receipt of welfare benefits and imposed the condition that recipients must work or be engaged in
work related activities in order to qualify for assistance. This provided motivation for county governments to design economic development strategies that will enable them to provide jobs for welfare recipients and other residents of the county.

Policies on economic growth and redistribution are now set to an unprecedented extent at the local level. Over the past decade, many local governments have created or expanded economic development departments or have increased the funds they provide to non-governmental or quasi-governmental economic development organizations. Many counties now have economic development professionals on staff to help create and implement development strategies for the county. To understand the consequences of welfare reform, it is imperative to identify the geographic variation in local economic development policies and to determine whether localities with a large number of welfare recipients engage in economic development policies that differ from policies of localities with relatively few welfare recipients. It is also important to find out if counties with economic development professionals on staff and those that have welfare devolved to the county level engage in different economic development activities to provide jobs and to make the county more attractive to outside businesses.

With the welfare reform act, welfare recipients are required to work and are allowed a limited amount of time to be on welfare. This has implications for local labor markets and for local economic development. The work requirement places extra pressure on local governments to create new jobs for welfare recipients as they strive to leave the welfare system. Counties have fewer resources than state and federal
governments and so are less likely to have the resources necessary for implementing welfare programs that provide job training or child care and economic development activities that used to be provided by the federal government.

States, counties and other local governments often implement economic development policies designed to help them get ahead of their neighbors. These policies may, however, lead to aggressive interjurisdictional competition that could dampen long-term growth and development and reduce the provision of local public services. The literature on local economic development indicates that states, as small open economies, may be in zero-sum competition with each other. States and local jurisdictions actively compete against each other for jobs, investment, and other assets that promote economic growth. Oates and Schwab (1991) argued that each state or local government looks at the economic development programs in neighboring states or localities before setting their economic development plans. Although competition in the private sector is agreed by most economists to be a positive force, the effect of interjurisdictional competition among governments for mobile capital is a controversial subject. While some authors believe that interjurisdictional competition leads to increased efficiency, others view competition as detrimental to economic development. Irrespective of the views on interjurisdictional competition, it is evident that competition influences the levels and types of development activities of local governments.

A major reason behind interjurisdictional competition is that many local governments seek to increase the number of jobs in the locality through the location of outside businesses in their community. Localities with more investors are more likely to have more jobs for county residents and a stronger tax base. Local governments are thus
highly likely to compete with each other for capital (new businesses). Since local
governments increasingly implement local economic development programs on their
own, they may act in a more aggressive manner to attract new businesses as compared to
the past when they had less interest in economic development. They may offer financial
incentives to new firms to induce the new investors to locate in their locality rather than
in another locality. A new firm entering a locality typically agrees to provide a given
number of jobs to local residents. In the presence of intergovernmental competition, local
officials may settle for a smaller number of new jobs in exchange for tax breaks so that
they do not lose the investor to another locality.

Competition among local governments likely leads to strategic interaction among
localities as local officials follow the lead of the most aggressive neighboring localities.
According to Brueckner (2000), some of the resulting strategic interaction could involve
setting public services or welfare benefit levels below the public's willingness to pay in
order to out-maneuver neighboring localities. Policies that will yield fast results may also
be substituted for those that take a longer time but would be more beneficial to the local
economy in the long run.

With the decentralization of welfare, states and local governments are allowed to
set different welfare benefit levels. Welfare benefit levels set at a higher level in one
locality than those set in another locality could induce welfare recipients to move to the
locality that has a higher welfare benefit level. To discourage migration of welfare
recipients, local officials may set lower welfare levels than they would have set if there
were no migration. This process whereby county governments set lower levels of welfare benefit levels and accept fewer jobs from new investors or provide more incentives for incoming firms is called a race to the bottom.

The observational unit of analyses used in the study is the county government. County governments perform critical functions that affect public well being especially in rural areas. County governments also play a key role in local economies and provide other services that are not provided by lower levels of government. Counties are the fastest growing levels of local government in the United States in terms of revenue and expenditure. The county government is thus appropriate for examining governance of rural areas of the nation.

This thesis investigates whether the localization of economic development and the decentralization of welfare affects the aggressiveness of local development activities and whether the shifting roles of federal and local governments leads to a race to the bottom in the provision of redistributive services provided by local governments. There have been numerous studies on whether competition exists among local governments and others have tried to evaluate the effect of competition on specified economic development programs such as welfare programs. This study investigates whether competition exists between county governments as they set the number of economic development activities to provide to attract new firms. It differs from other studies in that the presence of a race to the bottom in the provision of local public services is also tested.
1.2 Problem statement

Decentralization of welfare programs gives greater responsibility and authority to counties and other local governments in the United States. Increasingly, under decentralization, state and local governments now decide the type and level of welfare assistance to provide. Due to the added responsibility of county governments, local officials now have an increased interest in engaging in economic development activities to make the counties more attractive to potential investors. At the same time, local governments increasingly engage in economic development activities that would provide jobs for local residents. The tendency of localities to undertake strategies to strengthen the local economy is known as localization of economic development. The twin phenomena of decentralization of welfare to the local level and localization of economic development activities represent an important shift in the roles and responsibilities of local governments.

Decentralized welfare and localized economic development programs may lead to a lack of coordination among local governments in welfare and economic development programs. One result is strategic interaction between local governments. Strategic interaction among local governments may be in the form of business incentives provision, fewer jobs per investor and lower incomes and welfare benefit levels for the residents in the community. Strategic behavior of local governments may lead to interjurisdictional competition in which local governments compete with neighboring counties for investors. There may be competition in the welfare benefit levels set by
county governments. Strategic interaction by county and local governments and the resulting interjurisdictional competition may lead to a race to the bottom in the provision of public services.

The above interactions are especially important at the county level. This is because counties are important in rural areas since in most states, they are the default general-purpose government outside municipalities.

1.3 Objectives of the study

This study examines how competition among county governments affects the level of economic development activity and the provision of redistributive services at the county level. Other factors that affect the types of economic development decisions will also be evaluated.

The objectives of this study are:

1. To identify the types of economic development activities and types of public services provided by county governments.

2. To review theories and empirical analyses of interjurisdictional competition and from this body of literature to lay out a conceptual framework for analyzing competition among county governments.

3. To implement an empirical model for measuring whether localization of local economic development activities and devolution of welfare program administration leads to heightened aggressiveness of the economic development activities of county governments.
4. To determine whether the redistributive services provided by county
governments are influenced by interjurisdictional competition and other
attributes of counties.

1.4 The hypotheses

Four hypotheses will be tested in this study. The hypotheses are:

1. County governments choose their economic development activities in
reaction to economic development policies in surrounding counties.

2. Devolution of welfare leads to increased intergovernmental competition
for economic development.

3. Devolution of welfare leads to a race to the bottom in the provision of
local public services.

4. Counties with relatively aggressive intergovernmental competition are
more likely to have cut back redistributive county government services.

1.5 Outline and organization of this study

This study investigates the effects of devolution of welfare on economic
development activities at the county level in the United States. Due to a policy change
that empowers county governments to decide what welfare programs to implement and
how to go about it, there is an increased demand on the scarce resources of county
governments. They are likely to compete with nearby states and localities for capital.
They may thus implement economic development policies that are more aggressive than
in the past. The result may be a race to the bottom in the provision of public services.
County level data is used to analyze the effects of competition on levels of economic development and provision of public services. Econometric models are used to test the hypotheses provided above.

While most studies have focused on testing whether competition exists between state governments, this study focuses on interjurisdictional competition at the county level. An additional unique aspect of this study is that it examines the effects of competition on local economic development and the provision of local public services in general whereas other race to the bottom studies focus on either welfare benefit levels or tax rates.

The second chapter of the thesis gives an overview of the literature on competition between local governments. The models used in the various studies reviewed will be summarized in this section. Chapter three is an account of the concepts and economic theory used as a background for the study. The assumptions made and the econometric models used are also discussed in this chapter. Chapter four is a description of the data used in the analyses. In chapter five, results of the study and the hypotheses tested are discussed. The last chapter is a summary of the results obtained and presents a list of recommendations for further studies.
CHAPTER 2

A LITERATURE REVIEW ON COMPETITION AMONG LOCAL GOVERNMENTS

2.1 Introduction

This chapter presents a review of literature on intergovernmental competition, the race to the bottom, and econometric models of spatial interaction. The purpose is to provide a theoretical and methodological foundation for empirical testing of hypotheses regarding interjurisdictional competition among county governments in the United States.

2.2 Reasons for economic development activities

There are several reasons why local government officials engage in economic development activities. The reasons that local officials often cite for promoting economic development include a desire to increase the number of jobs in the community, to increase the income of low-income residents and all residents in general, to increase rents to property owners, to increase markets and improve the economy (Pagano and Bowman, 1995), to increase the tax base and tax revenue in the area, to decrease levels of unemployment, to decrease poverty rates, and to diversify the local economic base. There
is a possibility of competition between governments in the provision of these economic development programs since each county or local government also desires to have an increase in jobs and income and a reduction in poverty.

Behind the "official" reasons for economic development programs is a "political economy" reason. Politicians typically understand that economic growth and development are a collective good that contributes to electoral success. To ensure re-election they tend to promote policies that increase economic development activities because they believe their performances are judged by these activities by voters (Oates and Schwab, 1988).

One of the reasons why governments engage in economic development activities given by Wolman and Spitzley (1996) is the overriding interest in the well being of citizens and the attraction of economic activity. Governments also are concerned about improving general standards of living of residents.

Governments promote economic development because they seek to promote their community as a good place for investors to locate. Localities therefore use such programs to help improve their market position, their attractiveness for tourism and other industries and to generally have a high economic standing among their peers. Peterson (1981) states that:

Development policies are those local programs which enhance the economic position of a community in its competition with others.

Peterson also mentions that competition occurs between local governments because each seeks to maximize their economic standing subject to the economic development position of competing governments from other states or other local governments. The
development strategies of each local government thus depend on that of other
governments. The utility function of a local government according to the literature is:

\[ U_i = f(\text{economic development polices in jurisdiction } j, \text{ wage levels, per capita}
\text{ income levels, welfare benefit levels, employment levels} \ldots) \].

Other reasons advanced for engaging in economic development activities are that
officials desire to do what is right or good for the community and because it is politically
popular. Also, for a locality to provide reasonable amounts of public services at
reasonable tax rates, governments need economic prosperity.

Another major reason for economic development is the mobility of capital or
wealth in general. Capital is likely to move from regions with little economic
development activity into regions with higher activities. People tend to migrate to areas
with higher economic development and so businesses that move into these areas will
have larger markets and a larger pool of labor. Development is also important because
governments compete to attract mobile wealth so as to keep their tax base up (Bowman, 1988).

Others propose that declining income or employment is a reason for economic
development. In this scenario local officials search for development activities that would
help them survive or maintain a balance between their revenue generating capacity and
their ability to provide services. Pagano and Bowman (1995) state that a threat to a city's
revenue stream disrupts the tax-services balance and most assuredly triggers the search
for a development policy to redress the imbalance.

Others point to land owners and other stakeholders in the economy as urging local
officials to engage in development activities with the aim of increasing returns on their
investments. If economic activity increases in a community, it results in in-migration and
growth in various sectors of the economy such as agriculture, manufacturing and
services, and this in turn benefits all local property entrepreneurs.

In brief, the aim of local capital holders in economic development in their locality
is to attract more jobs, labor and capital and thus increase the rent that accrues to them. In
addition, local officials usually have a vision of what they think their region should or
could look like and so they design development projects - both industrial and commercial
- to generate revenue that would benefit the whole community.

2.3 What is interjurisdictional competition?

Many governments in the United States and other countries have economic
development as a high priority. Local officials primarily achieve economic development
by enticing new businesses into the locality. Local governments often attempt to get
investors to invest in their jurisdiction by offering tax incentives and specialized
infrastructure. In the United States, there is no strict criterion by which state and local
governments choose the type and level of incentives to offer. Rather, governments tend to
provide incentives that officials believe will induce businesses to locate in their localities.
According to Donahue (1997), the levels of incentives offered to new investment by local
governments have gone up tremendously over the past ten years. This has been largely
due to fierce competition among local governments to attract new businesses.

State and local business incentives and local subsidies to businesses have been a
source of controversy for decades. A major area of this controversy concerns the effects
of local subsidies on local and national economic welfare (Baum, 1987). Bidding by
localities for investment or the setting of economic development activities that depend on
development activities in neighboring regions is referred to as interjurisdictional
competition.

2.4 Effects and implications for economic development.

Intergovernmental competition has effects on the development of a community.
Researchers do not, however, agree on the effects of competition and the best way to deal
with the issue. While some studies look at the effects of tax incentives on competition
others look at the effects of welfare benefit levels. So far very few studies have actually
combined the two effects to see how they affect government decisions on development
activities. All these uncertainties make it difficult for policymakers to make decisions
based on the economic research that has been done. Commenting on the influence of the
plethora of tax studies NCSL (1997) concludes that growth or location based findings
from the tax literature are so disparate that they offer little guidance to policymakers
except that it is important and needs to be taken into account. As noted earlier they would
know that incentives matter but may have little or no guidance as to what to do in terms
of attracting businesses to effect local development. Studies that predict a race to the
bottom show that competition among local governments lead to decreased economic
development.

Buss (2001) gives some general guidelines to policymakers in his paper. He
suggests that policymakers should conduct cost-benefit analyses before deciding on
whether or not to implement a tax incentive, conduct periodic evaluations of all incentive
programs before and after implementation, and terminate incentive programs that
perform poorly. He also suggests making the whole incentives process transparent to the public to ensure accountability. Legally binding contracts should be used to ensure that businesses fulfill their end of the deal. Finally he mentions that award of incentives should be done such that it does not put other businesses at a disadvantage in terms of competition or devastate one economy at the expense of another.

2.5 Fiscal competition

The literature on fiscal competition among local governments has focused mainly on models of tax competition. In the tax competition framework, competition among jurisdictions is generated by mobile capital.

One viewpoint on fiscal competition is that it is a source of distortion in public choices. The literature here posits that competition may lead to tax rates below levels needed to finance efficient levels of public services (Oates, 1972). Break (1967) summarizes this viewpoint in the following way:

The trouble is that state and local governments have been engaged for some time in increasingly active competition among themselves for new businesses.... In such an environment government officials do not lightly propose increases in their own tax rates that go much beyond those prevailing in nearby states or in any area with similar natural attractions for industry.... Active tax competition in short, tends to produce either a generally low level of state-local tax effort or a state-local tax structure with strong regressive features.
According to Wildasin:

A perennial question in the literature is whether tax competition results in under-provision of public goods, i.e. tax rates and expenditure levels that are lower than optimal. A common though not universal result in the 'purely competitive' case is that public goods are under-provided in an equilibrium with tax competition.

In the case of tax competition, each jurisdiction sets an optimal rate subject to that set in other regions. Fiscal competition is manifested in the reluctance of local governments to raise expenditure levels, as that would mean increasing tax rates that could drive out local capital.

A paper by Oates and Schwab (1988) shows that in an attempt to attract new businesses and create jobs, local officials may relax environmental standards and provide overly generous incentives to reduce the cost for prospective firms. In the paper they find that in jurisdictions that set a positive tax rate on capital, there are distortions in local fiscal decisions and also in local environmental choices. Cumberland (1979, 1981) argues that state and local authorities, in their attempt to attract new businesses and create jobs, are likely to compete with each other by relaxing environmental quality standards with the aim of reducing costs to prospective business firms. He suggests that national minimum standards of environmental quality should be set to prevent degradation of the environment as local governments may compete with each other in the level of environmental standards to set.

Oates and Schwab (1988) show that for jurisdictions with homogenous sets of workers, local choices under simple majority rule will be socially optimal. They develop a model that incorporates the neoclassical theory of production with a medial voter theory.
to show the presence of interjurisdictional competition in tax levels and environmental standards. This model could also be extended to include the setting of welfare levels or economic development activities at the county levels in general. In the first model, the presence of majority rule in jurisdictions leads to socially optimal decisions on taxes and the environment. When local government behavior is incorporated into the model there are outcomes that are not socially and economically optimal for the community. In the model communities select a tax rate on capital and level of local environmental quality. Sources of competition here are the tax rates and environmental standards. Consumers are posited to maximize their utility over bundles of goods that include local public services and environmental quality. Workers find it in their interest to advocate for a subsidy on capital. This is because with a larger stock of capital they get higher wages but do not bear all the cost of a subsidy on capital. The cost of a subsidy on capital is spread to all residents both wage earners and non wage earners. Local governments thus use incentives (subsidies) to attract businesses and thus increase the capital stock of in the community. Increase in capital stock through the provision of incentives may lead to aggressive economic development and less efficient provision of local public services.

Kenyon (1997) shows that under the conditions of fully informed voters and policy makers, and the absence of spillovers or externalities, many jurisdictions with homogenous fiscal features and a government whose objective is to maximize residents' well being, state and local government competition could be efficiency enhancing. If, however, any of the above conditions is not met, then intergovernmental competition could lead to negative sum outcomes. From studies cited by Anderson and Wassmer (2000), and from the standpoint of reality, most intrametropolitan communities do not
have perfectly competitive markets. Also, various localities (even neighboring
communities) are not homogenous and so do not have the same resources and so they
engage in strategic behavior over time. One way in which they do this is by providing
similar incentives to attract capital.

A model of yardstick competition has been used in some of the public economics
literature. This approach models strategic behavior among local governments as they try
to meet demands of voters. Under this model it is assumed that voters make comparisons
between jurisdictions (Besley and Case, 1995; and Anderson and Wassmer, 2000) to
judge or evaluate the performance of their leaders. This forces incumbents to look at the
policy decisions in other jurisdictions before making theirs. Some studies use a
multinomial logit model while others use a probit equation to test for the evidence of
migration and competition.

2.6 Local government incentives targeted at specific businesses

The history of tax incentives offered to attract capital dates back to the 1800's
(Buss 2001) when states provided private industries with capital and other infrastructure
so that they would locate in their respective regions and provide residents with jobs.
Today, almost every local government implements incentives of some sort. Chi and
Leatherby (1997) observe that most states have a variation of the same set of tax
incentives.

Some of the incentives provided include tax exemptions from corporate income
tax, excise tax, personal income tax, job creation tax, goods in transport tax,
infrastructure improvements tax, and industrial investment tax. Other incentives include;
equipment and machinery tax exemption, manufacturer's inventories tax exemption, sales
and or use tax on new equipment exemption, raw materials for manufacturing tax
exemption, specified state products tax credit, tax stabilization agreements, accelerated
depreciation and research and development tax exemption. Incentives are usually
provided to help attract new businesses into an area with the aim of increasing
employment and capital flow into the region.

The effects of these incentives are, however, a source of big debate among
economists. Some writers argue that state and local business incentives are beneficial to
local economic development while others are of the view that they should be
discontinued due to their deficiencies. Baum cites literature that shows that at best these
incentives have a marginal effect. According to Rubin and Zorn (1985), incentives only
shift jobs from one place to another and do not provide economic benefit to areas outside
the region. For instance, some authors propose that interjurisdictional competition to
attract businesses and economic activity results in a zero sum or negative sum game when
the whole economy is taken into account. A contrasting view is that under conditions of
less than full employment of the national economy, the movement of economic activity
from one locality to the other may benefit the whole economy. Still others propose that
.even if competition is ineffective in terms of consumer welfare, it is beneficial to use
incentives in "self defense". Others, such as Charney (1983), Fox (1981), and Wasylenko
(1980), conclude that available public services and tax incentives do indeed influence the
location of firms within a given metropolitan area.

According to Baum (1987) the debate is on the effects of such subsidies on local
and national economic welfare. The effects of local subsidies, taxes and public services
on the location decisions of firms and the evaluation of local subsidy programs are other areas where there is a great deal of controversy. Local governments often "demand" jobs. Businesses "supply" jobs, and they generally seek to do so in a cost minimizing way. If a business is indifferent between locating in two separate regions, the region that offers the higher incentive per job created might be the one to get the investor if wages and other costs are equal. Local governments therefore get into a bargaining game with investors as they trade incentives for jobs. A local government may agree to fewer jobs or a lower wage rate compared to other counties in an effort to attract more investors.

Grant, Wallace and Pitney (1995) discuss two major approaches by local governments to economic development. In the first approach, governments embark on entrepreneurial development programs such as venture capital financing, high technology development and export-promotions. These programs are often implemented with the help of universities or not-for-profit, public-private partnership organizations. These entrepreneurial programs are generated within the community and exert a long-term influence on regional development. The second approach is based on increasing the supply of capital and labor to the locality without changing the basic industrial fabric of the economy. Under this approach, states and communities provide 'relocation incentives' to attract outside firms to relocate in their locality and to persuade existing firms to remain and not move out of the area.

Locational incentives are widely offered by state and local governments today. According to the literature business and tax incentives provision has risen to an all time high and has led to states being at war with each other (Bowman, 1988; Burnier, 1992; Forman, 1997; Guskind, 1989; Haider, 1992; Hamilton, 1994; Hanson, 1993; Kenyon,
Based on a survey of business enterprises, Greenberg and Reeder (1998) report that 61% of rural manufacturers in the U.S. were involved in business incentive programs between 1992 and 1995. Provision of incentives may lead to interjurisdictional competition if local governments compete for new businesses using development incentives.

In a model developed by Anderson and Wassmer (2000), the value of a city's manufacturing property tax base may be influenced by the manufacturing property tax abatements offered by the city as well as its geographic size. The authors suggest that simultaneous relationships exist among local employment rates, poverty rates, property tax bases, fiscal variables and economic development incentives. Their model incorporates the inherent endogeneity of the local variables that determine the efficacy of local incentive offers. They use a two stage least squares model. The methodology begins with models of what determines the residential employment rate and poverty rate in communities. They then describe separate models of what determines the value of local nonresidential property tax bases and the local provision of five economic development incentives (manufacturing abatements, commercial abatements, industrial development bonds, tax increment financing authorities, and downtown development authorities). They have a model of a decisive voter maximizing utility subject to constraints. The decisive voter makes policy choices that are in his best interest. The local policymaker accepts this decision as the community's own choice because it is the one most likely to ensure the policymaker's re-election or re-appointment. This model is referred to as the standard median voter model.
In his article, Baum (1987) uses a series of general equilibrium models to analyze the economic effects of locally financed subsidies on local and national welfare. This article explains why subsidies are still being used when the simple neoclassical model predicts that subsidies harm the factor they are supposed to benefit by decreasing the returns that accrue to the factor of production in question.

The community’s production possibility curve and the fixed factor’s consumption possibility curve are utilized to demonstrate that subsidies reduce economic welfare of a community’s fixed factor. Also, conditions for efficient production are utilized to demonstrate that tax subsidy schemes cause inefficient allocation of the mobile factor, which in turn reduce economic welfare. A brief overview of the model used is given below.

The model assumes two goods (X and Y) and two inputs, capital (K) and labor (L). Good X is exported and Y is consumed locally. Capital is completely mobile and labor is immobile. In the absence of a subsidy and under the assumption of perfectly competitive markets, producer rule for profit maximization is:

\[
\frac{MP_L^X}{MP_K^X} = \frac{w}{r} = \frac{MP_L^Y}{MP_K^Y}
\]

A subsidy of \(s\) is incorporated as follows:

\[
\frac{MP_L^X}{MP_K^X} = \frac{w}{r} (1-s) \neq \frac{MP_L^Y}{MP_K^Y}
\]

where \(r\) is the rental rate of capital, \(w\) is the wage rate for labor and MP is the marginal product.
McGuire’s (1982) model assumes that the community’s production possibility curve is linear when the supply of one factor is completely elastic in terms of one good because factor proportions in the two industries do not change when factor allocations change. This results in the equations:

\[ \frac{w}{P_x} = \left( \frac{P_y}{P_x} \right) MP_k^Y = MP_k^X \]

\[ \frac{r}{P_x} = \left( \frac{P_y}{P_x} \right) MP_L^Y = MP_L^X = \text{constant} \]

The model shows that fixed marginal products in X result in a fixed factor price ratio, fixed marginal products in Y and a fixed product price ratio. The author shows that if a subsidy to capital is used, it causes the amount of capital used in the community to increase. If an export good is produced, the subsidy expands the size of the local economy. In a similar manner, county governments offer economic development incentives to increase investment (capital) in the community.

2.7 Indexes of interjurisdictional competition

In the economic development literature, researchers use various measures of economic development activity and other variables that may have the potential of causing intergovernmental competition among counties. Many studies in this area are concerned with the extent of economic development activity by local governments. Most studies use a dichotomous dependent variable in which counties indicate whether they provide or do not provide a given local economic development tool, technique or strategy (Wolman and Spitzely, 1996). A lot of the studies that take this approach investigate each development activity separately using alternate models.
Another method used in the body of economic literature is to simply count the different kinds of economic development programs that a local government provides. According to Wolman and Spitzely, this usually involves a survey instrument in which local authorities are asked to check all programs offered out of a list of possible economic development tools, strategies, techniques or policies. Some authors from the literature conduct studies in which respondents are asked to tick all the economic development policies they offer out of 64 different economic development activities. Each locality's response is then ranked from 0 to 64.

The problem with these measures is that they show whether an activity is employed or not but do not give any indication about the extent to which it is employed. It is more difficult to measure the extent or quality of such a program. While the technique that uses a count of the economic development tools present in a community may illustrate the degree of diversity of tools or the complexity of the development approach, it is an imperfect measure of the extent of economic development activity (Wolman and Spitzely, 1996).

Another approach in the literature is to use the amount of resources deployed to economic development activity as a measure of the extent to which a local government engages in economic development activity. A good measure would thus be to use the dollar amounts spent on economic development activities or the number of employees used to run development activities. These measure are, however, not readily available from national sources of government data and the only way to obtain detailed development information is to collect primary data from state and county governments. This is costly and so is not used as often as would be desired by researchers. It is assumed
in such studies that counties that offer more economic development activities also use a larger amount of resources compared to counties that do not offer as many economic development activities.

Other research in the economic development literature uses ratings on the aggressiveness with which cities pursue economic development activities (Bowman, 1988). Some studied use the frequency of use of a variety of economic development tools. Other variables used in the literature to measure economic development include poverty rates or citizen needs, competition measures, fiscal stress indexes, economic distress, city factors, social and economic conditions or characteristics of cities. Other researchers use the percentage of jobs in the manufacturing sector as variables while others use the extent to which local governments engage in competition for economic development activities in their estimation models. Competitiveness is hypothesized to positively influence the local development activity in communities. Per capita income (Saavedra, 2000) have also been used in other studies.

2.8 Spatial econometric models

Some of the empirical models used to measure the effects of competition are discussed in this section. The focus is on the spatial lag model because it is capable of capturing the co-dependency of local governments.

The econometric model used by Saavedra, (2000) allows for the testing of competition among states in the provision of Aid to Families with Dependent Children (AFDC). She investigates whether AFDC competition occurs only between contiguous states or whether it occurs among all states. The model used is given below:
\[ b_i = \Phi \sum_{j=1}^{n} \omega_{ij} p_j + X_i \theta + \varepsilon_i \]  

where \( b_i \) is the AFDC benefit levels in state \( i \); \( \Phi \) is a scalar parameter identified as the slope of the reaction function; \( \omega_{ij} \) is the weight that aggregates the AFDC benefit levels in competing states; \( X_i \) is the vector of socio-economic characteristics of state \( i \); and \( \varepsilon_i \) is the error term. Also, \( i \) and \( j \) refer to the states \( (i \neq j) \). The errors are assumed to be independent across observations and normally distributed with constant variance. The specification in equation (1) implies that AFDC set in each state is related to the weighted average AFDC set in neighboring states. The slope of the reaction function is used as a measure of one state’s reaction to the average welfare benefit levels set in other states. The weight matrix is based on two options. First, a contiguity measure is used. Counties that are contiguous to one another are recorded as being neighbors. The weight matrix is thus structured such that off-diagonal entries are non-zero thus implying that the two states are contiguous or neighbors. Non-neighboring states would have a zero entry in the matrix to signify non-contiguous relation. This structure results in the diagonal of the matrix being zero since these entries correspond to the same state. A state cannot be contiguous to itself.

Second, the weight matrix is also based on a distance factor. In this situation, a state is a neighbor of another if the centroid is a given distance from the centroid of another state. All states within an arbitrary distance are considered to be neighbors while those that do not fall within the prescribed range are not neighbors. This is not a hard and fast criterion. Some authors use the distance between a major city in one state and other states as the distance criterion. If this distance is within a pre-specified range, then the
two states are said to be neighbors. This measure is arbitrary and may influence the results obtained. The cut-off distance used will depend on the unit of study for instance state or county. One would expect states to have a higher cut off rate than counties.

Saavedra (2000) tests for welfare competition using weight matrices based on both criteria described above - contiguity and distance. The model estimates include weights equal to

\[ w_{ij} = 1/p_i \quad \text{and} \quad w_{ij} = (1/s_{ij}) / \sum_{i} (1/s_{ii}) \quad j \neq i \] (2)

These weight matrices have non-zero off-diagonal entries corresponding to \( w_{ij} \). States that are not neighbors have an entry of zero. The notation is defined as:

\( w_{ij} = \) elements in the matrix
\( p_i = \) number of contiguous states to state \( i \)
\( s_{ij} = \) distance (mileage) between the major city in state \( i \) and the major city in state \( j \)

The spatial weight is summed for the states that are contiguous to state \( i \).

In matrix notation, the model used by Saavedra (2000) to test welfare competition is:

\[ B = \Phi WB + X\theta + \varepsilon \] (3)

\( B \) is the vector of AFDC benefits, \( W \) is the weight matrix, \( X \) is the matrix of socio-economic characteristics and \( \varepsilon \) is an error vector.

As pointed out by Anselin (1988), if there are spatial spillovers, failure to account for this will lead to biased estimates. Ordinary least squares (OLS) would thus be inappropriate for the regression. In the model used by Saavedra, states are hypothesized to be in competition with each other. Thus, the welfare benefit levels in one region are dependent on that set in other regions. There is, therefore, a dependence relation in which
WB from equation (3) is endogenous and so using a linear regression model will not be appropriate to test for spatial dependence. Maximum likelihood estimates are used to test for the significance of the slope parameter Φ. This parameter may be restricted to render the product ΦWB non-explosive. The Lagrange multiplier test is used to test this restriction because according to the literature it is robust to local misspecification especially when there are spatially autocorrelated errors. Results obtained under this condition are efficient and consistent.

2.9 Race to the bottom

Competition among local governments could lead to a race to the bottom. Because welfare recipients have a limitation on their duration on welfare, they are either forced off the rolls or leave to enter the labor force. This reduces welfare spending. The drawback is that if recipients' time is up they face the possibility of being taken off welfare even if they do not have enough income to sustain themselves and their families. This could lead to a reduction in standards of living and access to public services.

To explain the concept of a race-to-the-bottom, Brueckner (2000) makes a comparison between federal control of the welfare system and its devolution to the state level. Decentralization of the welfare system is accompanied by a change from a matching grant system to a block grant system. Every grant that is eligible for matching under the matching grant system must be precisely defined and this may affect the rate of innovation in the jurisdiction. Under the block grant system, any expenditure that exceeds the federal government contribution is paid in full by the state. The matching grant system on the other hand had federal government covering a percentage of each dollar
spent, thus lowering the cost of welfare to the state. The usage of the block grant system raises the cost of additional welfare provided above federal contributions so states and local governments may not be motivated to allocate funds for additional services. This is especially likely to occur when local jurisdictions are in competition with each other.

A number of authors argue that switching to the block grant system may not be in the interest of society since it potentially lowers welfare benefits below the levels that society would be willing to provide. Generally, the more affluent people in the community care about the poor in their region. Their altruism to the poor extends to those in other regions. These externalities (benefits) to other regions are not taken into consideration when states set benefit levels, and the result is that welfare benefits are insufficiently generous in each state. Oates (1972), and Ladd and Doolittle (1982) suggest that the federal government can administer the welfare system more efficiently than state and local governments due to the occurrence of interjurisdictional spillovers.

According to an article by Brueckner (2000), a race to the bottom may occur in welfare migration. Brueckner argues that matching grants are better able to deal with migration. The reasoning behind this is that in the presence of welfare migration, recipients move from localities with low welfare benefit levels to localities with higher levels. Welfare recipients migrate so that they can receive higher benefit levels and thus increase their standards of living. Taxpayers are said to compare the increase in welfare benefits for the less fortunate in their community with the increase in their tax burdens. In the absence of welfare migration, taxpayers know that an increase in their taxes will go to increase the welfare benefits of the current welfare recipients. On the contrary, when there is welfare migration, the net effect is that all welfare recipients receive a lower
benefit level since migration brings in more needy people. States and localities that are more generous in the amount of welfare payments may attract more welfare dependent people. As stated by Brueckner:

Generosity is thus more "costly" with welfare migration, and this leads the better-off residents to rationally select a lower level for the state welfare benefit. To avoid becoming a welfare magnet, each state is not as generous as it otherwise might be, an outcome that has been dubbed the "race to the bottom".

Studies in the literature on welfare migration have mixed results. While some studies find evidence of welfare migration, implying a race to the bottom, others find no evidence of migration. These studies also show that even when migration does not occur, local officials may believe otherwise and may still act as if migration occurs. Thus, migration does not have to occur for local officials to react by providing lower levels of assistance to needy families. Brueckner argues that the modeling of strategic interaction may be a better approach to test for a race to the bottom since it occurs even if welfare migration does not occur but is thought to occur by officials.

2.10 Strategic interaction

Another approach followed in the literature on the race to the bottom is to test strategic interaction by state and local governments that could lead to the progressive worsening of the well being of some residents. For example, the welfare benefit levels provided by states may affect the benefit levels of nearby states when states act strategically by setting their benefits levels after looking at or considering the welfare benefit levels set in nearby states.
Other strategic interaction occurs when local officials offer more incentives to new businesses. Local governments may also accept a lower number of new jobs created per new investor than neighboring jurisdictions may be willing to accommodate. These strategies may lead to lower economic development levels because resources that could have been used for economic development are used to attract businesses and at the same time new firms may provide less income and jobs for local residents.

Studies of strategic interaction generally conclude that such behavior does indeed occur between states (Figlio, Kolpin, and Reid, 1997; Peterson, Rom and Scheve, 1997; Smith, 1997; and Saavedra, 2000). Figlio, Kolpin, and Reid estimate a model with the AFDC and food stamp benefits as the dependent variable. Independent variables used include the weighted sum of changes in neighbors' maximum AFDC and food stamp benefits, per capita income, fraction of white recipients, ratio of females to males and fraction of unmarried recipients. The model includes alternative weighting schemes for neighboring regions based on proximity or contiguity. The study concludes that states tend to set welfare benefit levels interdependently.

Saveedra uses AFDC benefit levels as the dependent variable and per capita income, proportion of African-Americans, female unemployment, unmarried parent, and the proportion of democrat state representatives as the independent variables. She concludes that AFDC benefits are set interdependently between state governments.

2.11 Theory of Nash equilibrium

Counties that are in competition with each other have the option to either cooperate or not to cooperate with nearby competing regions. States and local
governments are thus said to engage in a game. Game theory is a sub-discipline of economics that focuses on strategies by economic rivals and the outcomes of their rivalry. Game consists of sets of players with alternative strategies available to each player. Players in the game have a payoff matrix in that they know the profits of each strategy but they do not know the strategy that other players will take (Binger and Hoffman, 1998). If the players of the game do not cooperate they both get less utility and so loose. Games in which there is a payoff structure such that players can make higher joint profits by cooperation are called nonzero sum games. Those in which one player makes higher profits at the expense of the other are called zero sum games.

When local governments are competing against each other, each tries to get the highest individual payoff and thus stay ahead of their competition. Staying ahead of the competition implies being able to attract more capital into the locality, lowering the level of unemployment, increasing provision of public goods and services, and increasing general welfare of the community. The theory of Nash equilibrium applied to local public finance suggests that local governments may set levels of development that could possibly lead to an equilibrium. At the Nash equilibrium point, players of the game cannot improve their payoff by changing their strategy. However, when state or local governments compete in this manner, the overall effect is a potential lowering of the level of economic development because economic development strategies may be adopted that do not benefit the economy.

Wildasin (1988) analyses Nash equilibria in a simple model of an economy with jurisdictions engaging in fiscal competition. It is assumed that each local jurisdiction sets a single tax rate and the revenue from the tax is used to finance expenditure on public
goods in the community. Wildasin uses a model where jurisdictions play a Nash game using as a strategic variable, the level of expenditures rather than the tax rates as has been done in other studies. Wildasin theorizes that first, expenditure levels are set by local officials, and then officials decide the tax rates that would sustain the level of expenditure. Local governments thus look at the tax rate set by other governments before they set theirs, implying a Nash equilibrium in the setting of tax rates.

2.12 Summary of conceptual and empirical literature on interjurisdictional competition

This chapter reviews the literature on intergovernmental competition. There is no general consensus on the effects of competition. Some studies find that competition exists between local governments in setting of welfare benefit levels and tax rates. With county governments having authority to implement development programs without federal government interference, they have tended to offer more economic activities to help increase their local economy. Local officials try to attract investors into their region by providing incentives. This is a source of competition between local governments because each local government tries to provide better incentives for investors.

Some of the studies reviewed in this chapter find that welfare migration and strategic interaction between local officials could also lead to the provision of less economic development programs and less public services. A race to the bottom could result from the under-provision of public services and lower welfare benefit levels.
CHAPTER 3

CONCEPTUAL FRAMEWORK

3.1 Introduction

In this chapter, two alternative intergovernmental competition models and a race to the bottom model are developed. The first two models are used to test for competition among local governments in the provision of local public services and the local economic development of the counties. The third model is used to test for a race to the bottom in the provision of redistributive services.

The literature reviewed in the previous chapter indicates that economic development activities of state or local governments depend to some extent on the development activities in surrounding states and localities. Previous research suggests that factors such as per capita income of an area compared to the national per capita income, percentage of people living below the poverty line, whether the locality is in a metropolitan or non-metropolitan area, and previous development policies in the area also influence the type and number of economic development activities that state or local governments undertake.
3.2 Intergovernmental competition models

Since this study deals with county governments and whether neighboring counties influence each other's economic development activities, spatial dependence is expected. Hence, a spatial model is used. The model used is similar to one used by Saavedra (2000). Two alternative spatial lag models are specified with the percentage of a county government's economic development budget used to attract new businesses as the dependent variable and socio-economic characteristics as well as other attributes of the county, and state fixed effects as the explanatory variables in one model. An alternative interjurisdictional competition model is also used in which the level of economic development activity is the dependent variable. The number of economic development programs offered by county governments is used as a measure for the level of economic development activity in the county. This model uses explanatory variables similar to those in the first interjurisdictional competition model. The alternative model also includes the poverty rates, and the percentage of economic development budget used to attract outside businesses as explanatory variables. The spatial lag of the dependent variables is added as an independent variable in all the estimated models.

The models are used to test the hypothesis that devolution of welfare leads to increased intergovernmental competition in economic development. County governments are assumed to be in competition with each other as they compete for footloose capital. To keep tax rates low, county officials may cut welfare benefit levels. This leads to differences in welfare benefit levels set in the various jurisdictions.

Competition between local jurisdictions leads to a Nash equilibrium with accompanied under-provision of public goods. The provision of public goods and
services by local governments depends on the level of economic development in other localities and the public goods provided in neighboring states or counties. An empirical model to capture this behavior should consist of a reaction function which shows that economic policies in an area depend on area characteristics and on the economic policies in neighboring jurisdictions.

This study uses data from county governments and so spatial econometric models are estimated because the study theorizes that there is spatial inter-dependence in the economic development activities in each county. The model includes a weight matrix that acts as a spatial lag. It is similar to the lagged dependent variable used as a regressor in time series models only the dependent variable is now lagged over space. The rationale for the method selected is that county governments are hypothesized to act strategically in the levels of economic development activity that they undertake.

The problem of spatial dependence and autocorrelation has received a great deal of attention in the last few years in regional economics, environmental economics and other areas of research. States, provinces, counties, municipalities, and townships are appropriate units for spatial analyses since they are located in geographic space and separated by distinct boundaries. In general, any scenario in which data is collected from subjects based on location, space or distance can be considered for spatial dependence.

Spatial models are used when there is the need to find out if other spatial units, such as county governments, have an influence on the given spatial unit under consideration. According to the literature there are several orders of contiguity that can be specified in constructing the spatial weight matrix (Anselin, 1988). The most common weight matrix used is a first order contiguity matrix or an inverse distance matrix.
A contiguity weight matrix is used in this study. The relation between competing counties is theorized to be one is which counties are influenced by economic development policies in nearby counties. The contiguity matrix is thus based on "rook contiguity" in which counties that share a common border are considered to be neighbors. It is theorized that the effect of neighboring counties tapers off considerably beyond the first order contiguous neighbors. A first order contiguity weight matrix is used in this study. The spatial weight matrix used in the study does not include counties that did not respond to the survey and counties that had missing observations.

The spatial model used has the following form:

\[ L_i = \phi \sum_j w_{ij} L_j + X_i \theta + \varepsilon_i \]

(4)

where \( L_i \) is a measure of the economic development activities of county \( i \) that is used to attract new businesses, \( X \) is a vector of socio-economic characteristics and other attributes of county \( i \), \( \varepsilon \) is the error term, and \( \theta \) is the vector of coefficients of county characteristics. The coefficient \( \phi \) is the slope of the reaction function, and \( w \) is the weighting of the levels of economic development in the competing counties. The error term is assumed to be normally distributed, homoskedastic and independent across all observations.

The independent variables include a measure of whether the county is metropolitan or nonmetropolitan, whether welfare has been devolved to the county level, whether the county has an industrial park, poverty rates, whether the county government has an economic development professional on staff, and the manufacturing share of total
employment of the county. State dummy variables are also included in the model to control for fixed effects, which are factors that may be common to all counties in a given state.

The spatial lag model can be rewritten in matrix form as:

\[ L = \phi WL + X\theta + \epsilon \]  \hspace{1cm} (5)

3.3 Race to the bottom model

In the race to the bottom model, the dependent variable is the number of redistributive services that are not provided or that have been cut back in the county over the past five years. A spatial lag model similar to the interjurisdictional competition models is estimated. The independent variables include the spatially lagged dependent variable, the metropolitan-nonmetropolitan status of the county, devolution status of the county, poverty rates, and whether there is competitive bidding with other counties. As in the interjurisdictional competition model, state controls are added as independent variables.

3.4 Estimation methods

The parameter of the lagged dependent variable of the spatial lag model could be written as:

\[ \hat{\rho} = (y'w'wy)^{-1} y'w' y \]
\[ y = \rho wy + \epsilon \]  \hspace{1cm} (6)

\[ \epsilon \sim N (0, \sigma^2, I_n) \]  \hspace{1cm} (7)
The cross-sectional data used in the study are analyzed using a maximum likelihood estimator. Algorithms in LeSage's spatial econometrics library are used to estimate the model parameters in MATLAB. In the presence of spatial dependence, the OLS estimate is biased and inconsistent. Since observations are assumed to be generated by a spatial process, there is spatial dependence between the observations of the dependent variable (the y vector). A solution to the biased estimates from the OLS model is to use a maximum likelihood estimator for the parameter, ρ. This method enables the author to estimate the value of ρ that maximizes the likelihood function:

\[ L(y | ρ, σ^2) = \frac{1}{2πσ^2} \left| ln - ρWy \right| \exp \left\{ -\frac{1}{2σ^2} (y - ρWy) (y - ρWy) \right\} \]  

(8)

A simplification of the function is to use a concentrated log likelihood function such that the disturbance term, sigma squared, is eliminated. LeSage's MATLAB function library contains a simplex univariate optimization routine that enables the estimation of the resulting equation.

3.5 Limitations of model

The models described above have several potential limitations. First, there could be missing variables that could influence the pattern of competition between counties. Omitting these variables could cause the model parameters to be biased. Second, there could be other factors or policies not accounted for in the model that may be common to a particular group of counties, making them act in the same way. Thus, county governments' adoption of the same economic development tools or activities may not be
due to competition but may be attributable to other common factors or characteristics of county governments in an area. State effects are included in the model in an attempt to capture policies that may be common to counties in the same state.

3.6 Rationale for variables

In the interjurisdictional competition models, the dependent variables are the percentage of a county’s economic development budget used to attract new investors (in model version one) and the level of economic development activity in the county (in model version two). The percentage of a county’s economic development budget used to attract new investors is a proxy for the aggressiveness of a county’s economic development activities. It is contended that the higher the percentage of the economic development budget used to attract new businesses, the more aggressive the county government’s economic development activities. In the same manner, a county that uses a relatively low percentage of its economic development budget to attract new firms is assumed to be less aggressive in its economic development activities.

To construct the economic development activity index from the survey data, the total number of development incentive programs offered by the county to new or expanding businesses is summed up. It is posited that counties in competition engage in more economic development activities to stay ahead of their neighbors.

The explanatory variables used in the regression are a measure of whether welfare has been devolved to the county level, metropolitan-nonmetropolitan status, presence of an economic development professional on staff, poverty rates, percentage of a county's
economic development budget used to attract outside businesses (in model version two), existence of an industrial park, and the manufacturing share of total employment.

A zero-one variable is used to show whether a county is in a state that has devolved welfare to the local level. This variable is important because devolution of welfare may affect the economic development strategies of county governments. Counties in devolved states are hypothesized to be more likely to engage in competition with neighbors because they have the responsibility of helping welfare recipients find jobs. These counties are likely to offer more business incentive programs to help attract capital. Counties eager to provide jobs for residents may compete with other counties for mobile capital with the aim of getting more investment and hence increasing incomes and jobs for residents in the locality. Counties in states that have devolved welfare to the local level are likely to be more competitive than counties in states that have not devolved welfare to the local level.

Another explanatory variable used is whether counties are metropolitan or nonmetropolitan. Metropolitan counties are considered to be all counties in the U.S. Department of Agriculture’s rural-urban continuum code categories 0 - 4 and 6. Counties in categories 5, 7, 8 and 9 are considered to be nonmetropolitan (see appendix). The rationale for including this variable is that nonmetropolitan counties generally have fewer fiscal resources and fewer public services.

The presence of an economic development professional on staff is likely to affect the number of economic development programs provided by county governments.
Counties that have an economic development professional on staff are hypothesized to be more competitive in their economic development activities and are likely to be more aggressive in their interactions with neighboring counties.

Poverty rates in 1997 are also used in the regression. It is anticipated that the poverty rate in a county is positively related to the number of economic development programs. High poverty rates may induce local officials to search for solutions that could help solve the poverty problem.

The percentage of a county government's economic development budget devoted to attracting new firms and businesses is expected to be positively related to the number of economic development programs provided by a county government. Counties with smaller portions of their economic development budget allocated to attracting new investment are expected to be less aggressive and therefore to offer fewer economic development programs.

The existence of an industrial park is also expected to positively affect the aggressiveness of local economic development activities. Counties with industrial parks generally want to fill them up with businesses. It is thus likely that they would offer more incentive packages to entice investors into the locality. They would rather spend some revenue to attract new firms and persuade businesses to occupy their industrial park than let the park remain as a "white elephant". For this reason, it is anticipated that local officials in counties with industrial parks will spend a higher percent of their economic development budget on attracting businesses and may offer more economic development programs.
The share of manufacturing in total employment is included in the models because this variable is an indication of the structure of the local economy. Counties where manufacturing represents a relatively high share of total employment are heavily industrial and local governments in such areas typically have very active economic development programs. In contrast, localities that have a high percent of employment in agriculture or retail sectors tend to devote fewer resources to economic development programs. It is therefore hypothesized that counties with a higher share of manufacturing in total employment are likely to engage in a greater number of economic development activities.

In the race to the bottom model, it is postulated that counties in metropolitan areas are less likely to have cut back the provision of redistributive services. This is because these counties have more fiscal resources and so would have more revenue to sustain these services. Nonmetropolitan counties, on the other hand, may provide fewer redistributive services, especially if they engage in competitive bidding with other counties. Intense interjurisdictional competition is expected to cause a decrease in the redistributive services available in the county. Competition may cause governments to use what little resources they have to persuade new firms to invest in their area thus leaving little revenue for redistributive services as well as other long term economic development plans like the creation of human and social capital.

Whether or not a county is devolved in terms of welfare programs is also included as an explanatory variable in the study because the devolution status of a locality is likely to affect the public services provided. It is hypothesized that counties in which welfare has been devolved are more likely to have cut back the provision of public services...
because these counties now exercise local control over the provision of services to welfare recipients. In the highly competitive environment in which localities seek to attract jobs, it is possible that counties may cut public services to keep taxes low and stay on top of the competition.

Poverty rates in a county are likely to influence the expansion of redistributive services. High poverty rates could lead to more redistributive services if the taxpayers in the community care about the poor in their community and willingly pay taxes geared towards increasing redistributive services in the county.

The lagged dependent variable gives an indication of whether one county looks at the redistributive services in other counties before deciding on its own redistributive services. State effects are also included in all models. This variable is added to control for factors at the state level that may influence economic development activities or redistributive services of county governments.

3.7 Summary of chapter

The empirical models estimated in the thesis are discussed in this chapter. Two interjurisdictional competition models and a race to the bottom models are presented and the variables in each model are discussed. The chapter includes a discussion on the limitations of the models used.
CHAPTER 4

DATA

4.1 Introduction

This study examines whether county government services and economic development programs have changed as a result of the decentralization of welfare and the localization of economic development activities. Primary and secondary data on county governments and county economies are used to test the hypotheses presented in the initial chapter of this thesis.

The primary data was obtained from a county government survey sent to all counties in 46 states. A survey was conducted to provide the necessary information for the analysis because the secondary data available from the Census of Governments provides information on broad categories of expenditures and revenues but lacks information on specific services and programs provided by county governments. Secondary data are used to supplement the primary data from the survey. The sources of secondary data are the U.S. Bureau of the Census and the Regional Economic Information System (REIS).

The county was used as the geographic level of analysis and the county government as the observational unit. County governments perform critical functions that
affect public well being especially in rural areas. They also play an important role in local economies and provide services that are not provided by lower levels of government in rural areas. Gold (1996) states that counties are the fastest growing levels of local government in the US in terms of revenue and expenditure. The appropriate level of government for examining governance of rural areas of the nation is thus the county level since the county is the default general-purpose government outside municipalities.

The questionnaire and the mailing schedule are discussed in the first section of the chapter. The second section presents descriptive statistics on the survey data. The types and sources of secondary data used in the analysis are also discussed.

4.2 Survey data

The survey was carried out in 46 states in the U.S. The four states not included in the survey are Alaska, Hawaii, Massachusetts, and Rhode Island. Rhode Island and Massachusetts were not included in the survey because counties are not functioning units of government in those states. Alaska and Hawaii were not included because they are geographically isolated.

The survey was sent to 2,700 counties in the 46 states which have counties as the unit of government. Out of these counties, 1678 responded to the survey, a response rate of 62%. This response rate is comparable to other surveys of local officials (Flora et al, 1997). Because of non-response to some questions in the survey, 1412 observations (counties) were used in the analysis.

Appropriate county government officials (key informants) were sent the survey questionnaires. The survey was sent to public offices that differed by state and were
chosen in consultation with National Association of Counties (NACo) staff. In many states, the questionnaires were sent to county commissioners or county executives. In states where commissioners or executives play a less important role, the questionnaires were sent to county clerks or county auditors.

Information about the survey was first sent to all state associations of counties to create awareness on the survey through the associations’ newsletters. Pre-survey letters were also sent to inform respondents that they would be receiving the questionnaires in the mail. The survey was sent out in Fall 2000. A cover page of instructions on how to fill the forms and return envelopes with correct postage were added to encourage increased response to the survey. Two weeks after the first set of questionnaires were sent, post cards were sent to remind respondents to mail the answered questionnaires. Three weeks after the post cards were sent, follow-up surveys were sent to non-respondents. This batch also included cover letters and stamped return envelopes. A third set of questionnaires was sent to non-response counties in early 2001. Follow-up phone calls were made to the state county associations a few days after the third set of questionnaires were sent. Phone calls to remind respondents to send in the filled out forms were made as prescribed by Dillman (1999). The phone calls were targeted especially at non-response counties in states with low response rates. Finally, surveys were sent to alternative county officials in states with low response rates and follow-up phone calls were made again to non-responding counties.

In a survey, there is always the possible occurrence of sample bias from non-respondents. This problem arises if the characteristics of responding counties are different from those of non-responding counties. Follow-up mailings and phone calls to non-
response counties helped to decrease this bias. In the final dataset, the metropolitan and nonmetropolitan proportions of responding counties are identical to the metropolitan and nonmetropolitan proportions of all (responding and non-responding) counties in the United States. Therefore, non-response bias across county types is not a problem in this dataset.

4.3 Content of the dataset

The survey covered three broad areas. First, there were questions that asked for information on county government structure and size. Second, questions were asked regarding economic development strategies and programs in the county. The percentages of local economic development budget used to attract new and or retain old businesses were elicited. Respondents were asked to rank the importance of the various objectives of county governments in promoting economic development. Information on whether counties engage in competitive bidding for businesses with other counties in the same state or in different states was obtained. Respondents were also asked to indicate whether or not the county government administers TANF (Temporary Assistance to Needy Families). Third, through the survey information on redistributive services provided by county governments and whether there has been a change in public services provided by counties are provided. Specifically, respondents are asked to indicate whether the county government's provision of redistributive services over the past five years has been cut back, increased, remained the same, or whether the services are not provided at all. Respondents were also asked to indicate if services are provided by non-governmental institutions or in conjunction with other local governments.
4.3.1 Descriptive statistics from the county government survey

The following section is divided into three subsections. The first subsection describes the characteristics of the county. The second subsection discusses the economic development strategies of the county and the last subsection describes the public services provided in the county.

4.3.1.1 County characteristics

Information on various attributes of county governments was obtained through the survey. The percentages of responses for the various county attributes are given below. Counties were assigned to two broad categories - metropolitan and nonmetropolitan. Fifty percent of the responding counties are nonmetropolitan while the other half are metropolitan. Thirty seven percent of responding counties are located in states that have devolved welfare to the county government level and 63% are situated in non-devolved states. Figure 4.1 presents these county attributes.
Figure 4.1: Distribution of characteristics of responding counties.

Counties were further assigned to eight size categories according to the number of people employed by the county government. Approximately 3.3% of responding counties employ 0-24 employees, 11.5% employ 25-49 employees, 23.5% employ 50-99 employees, 28.9% employ 100-249 employees, 13.2% employ 250-499 employees, 6.2% employ 500-749 employees, 2.9% employ 750-999 employees and 10.5% employ 1000 or more employees. Also, nonmetropolitan counties are more likely to employ fewer people than metropolitan counties. Six percent of nonmetropolitan counties and approximately 1% of metropolitan counties have 0 – 24 employees. Only 0.1% of
nonmetropolitan counties and 40.8% of metropolitan counties have 1,000 or more employees. Non-metropolitan counties have a mode of 50-99 employees whereas metropolitan counties have a mode of 1,000 or more employees.

4.3.1.2 Economic development strategies

The development of a new industrial park occurred in the past five years in 29% of the responding counties while the remaining counties (71%) do not have a new industrial park. A similar percentage is found for counties that respond that they have expanded an existing industrial park. Approximately 58% of the counties surveyed responded that they did not have an economic development professional on staff whereas 42% said that they have such a resource person. These results are shown in Figure 4.1. The response, if yes, implies that the county has the characteristic in question. If no, the response means the county does not have the characteristic in question.

Figure 4.2 shows the frequency distribution of responses regarding the percentage of county economic development budget used to attract new firms into the county. Approximately one third of respondents said that they did not use any of their county's economic development budget to attract new firms. A fourth of the respondents said they use 1% - 20% of this budget to attract new firms, 19% indicated 21% - 40%, 13% indicated 41% - 60%, 5% indicated 61% - 80%, and 2% indicated 81% - 100% of their economic development budget is used to attract new firms.
Figure 4.2: Percent of county economic development budget used to attract new businesses.

The survey data indicates that there is competition between the respondent county and other counties in the state, between the respondent county and counties in other states, and between communities and the respondent county. More counties report competition between contiguous counties than competition with other states or competition among communities within the county. When these three types of competition are aggregated, a total of 37% of counties report the existence of interjurisdictional competition. Figure 4.3 shows this distribution.
Figure 4.3: Types of competition experienced by county governments.

The degree of fiscal stress perceived by county officials was measured in this survey. A third of the counties surveyed said that the loss of federal revenue was a very important problem for the county government's finances, 45% said the loss of state revenue was very important, and 30% said that a decline in their tax base was an important problem. An index of fiscal stress computed from the counties that responded that any of the three sources of fiscal stress mentioned above is a "very important" problem for county governments is shown in Figure 4.4. The fiscal stress index shows
that 45% of responding counties experience one or more of the three types of financial stress in their revenue. Figure 4.4 shows the percent of counties facing each kind of fiscal stress.

Figure 4.4: Fiscal stress faced by county governments in their sources of revenue.

As shown in Figure 4.5, 73% of respondent counties view the loss of federal funds as a "very important or somewhat important" problem for the county government's finances. The loss of state revenue and declining tax base had 84% and 55% of
respondent counties, respectively, saying that the loss of state revenue and declining tax base is a "very important or somewhat important" problem for the county's finances.

![Bar chart showing the percentage of counties for different loss scenarios.]

Figure 4.5: Level of importance of revenue loss to county government finances.

4.3.1.3 Public services provided by county governments

Respondents were asked to give details on county government services. Services provided most widely by county governments are law enforcement (84% of counties), 911 service (82%), senior citizen's programs (57%), mental health services (53%), health clinic services (52%), emergency medical services (51%) and solid waste removal (51%).
In Figure 4.6, the types of services available in the various counties are shown. The services are categorized into two groups. The first group consists of services that have either increased or remained the same over the past 5 years. The second group includes services that have either been cut or are not provided over the same period of time. Mental health services and health clinics are the services that have been increased the most. Services that have been significantly cut or that are not provided include battered persons shelter, public housing, housing assistance, homeless shelter, food pantry, elder care, drug and alcohol rehabilitation, and child care/head start.
Figure 4.6: Changes in the redistributive services provided by county governments over the past 5 years.
4.3.2 County government frequency distributions categorized by county attributes

Frequencies for some of the attributes of the counties surveyed are categorized by the metropolitan-nonmetropolitan status, whether the county is in a state that has devolved welfare to the county level, and whether the county has an economic development professional on staff.

Metropolitan counties engage in a greater number of economic development activities than nonmetropolitan counties. A similar result was found for the percentage of a county's economic development budget spent on attracting new firms. The majority of counties that used relatively high percentages of their budget to attract new firms are metropolitan. Thirty two percent of nonmetropolitan counties have a development professional on staff while 52% of the metropolitan counties have an economic development professional on staff. Out of the 29% of counties that have a new industrial park, 23% are nonmetropolitan and 34% are metropolitan.

Responding counties are categorized by devolution status and the number of economic development activities in the county. The list of possible economic development activities in the questionnaire includes employee training, free land or land write-downs, industrial revenue bonds, infrastructure improvements, locally designated enterprise zones, low-cost loans, one-stop permit issuance, regulatory flexibility, relocation assistance, screening of job applicants, special assessment districts, subsidized buildings, tax increment financing, tax abatements, utility rate reduction, and zoning or permit assistance. Counties that have the responsibility for administering welfare offer a larger number of economic development activities. Counties with devolved welfare are more likely to engage in aggressive economic development strategies than counties...
where welfare has not been devolved. Figure 4.7 shows the distribution of counties by devolution status for all counties with 6 to 16 economic development activities. Figure 4.7 also shows that devolved counties offer a larger number of economic development activities than non-devolved counties.

![Graph showing distribution of economic development activities by devolution status.]

Figure 4.7: Distribution of development activities of counties by devolution status.
As shown in Table 4.1, fifty-six percent of metropolitan counties reported that they did not engage in competitive bidding with other localities whereas 44% said they engage in competitive bidding. Seventy two percent of nonmetropolitan counties said they did not engage in competitive bidding with other localities whereas 28% said they engage in competitive bidding.

Whether a county is in a state that has devolved welfare to the county level also influences whether the county engages in competitive bidding with other localities and whether the county experiences fiscal stress. While 54% of devolved counties indicated that they engage in competitive bidding with neighboring localities, only 39% of non-devolved counties indicated they engage in competitive bidding.

Table 4.1 also shows the frequency distributions of whether counties experience fiscal stress. While 60% of metropolitan counties reported no fiscal stress from a reduction in revenue from federal and state sources as well as a declining tax base, 40% said the reduction in revenue is a very important problem. Rural county responses indicate that 51% do not experience fiscal stress while 49% view a reduction in revenue as a very important problem. More nonmetropolitan counties face fiscal stress from reduction in revenues from federal and state sources as well as a decline in the tax base than metropolitan counties. The percentage of devolved and non-devolved counties that said they experience fiscal stress due to reduction in federal revenue, state revenue and a declining tax base are 47% and 46% respectively. Table 4.1 shows the percentages of counties that compete against each other by metropolitan and devolution status.
Table 4.1: Percentages of counties that engage in competitive bidding and experience fiscal stress categorized by metropolitan and devolution status.

While 39% of nonmetropolitan counties responded that loss in federal revenue was an important problem for county governments, 27% of metropolitan counties said it was a problem. Similarly, the loss of state revenue was viewed as a very important problem by 50% of nonmetropolitan counties whereas 41% of metropolitan counties chose this option. In the same manner, the decline in tax base was more important in nonmetropolitan counties (41%) than in metropolitan counties (22%).

The number of devolved counties that have cut redistributive services or did not provide redistributive services was similar to the number of counties in states that have
not devolved welfare. Redistributive services that were cut back and services that are not
provided by county governments were higher for nonmetropolitan counties than for
metropolitan counties. A larger number of metropolitan counties than nonmetropolitan
counties indicated that there has been an increase in the number of redistributive services
provided. The only exception is food pantry services, which were cut back or not
provided by more metropolitan counties than nonmetropolitan counties.

4.4 Secondary data

The secondary data used come from various sources. Data from the United States
Census Bureau, the Economic Research Services (ERS) of the U.S. Department of
Agriculture, and the Regional Economic Information System (REIS) are used in the
study.

The share of manufacturing in total employment is used as an independent
variable in the analysis described in the next chapter. These data are obtained from the
Regional Economic Information System (REIS) CD-ROM, 1969-1999. The source of the
data is the Regional Economic Measurement Division of the Bureau of Economic
Analysis, U.S. Department of Commerce. This dataset contains estimates of employment
by industry in Standard Industrial Classification (SIC) division detail. Employment is the
average number of persons holding jobs, both full-time and part-time. The dataset is
classified by industry and type of employment (wage and salary employment as well as
self-employment). The Regional Economic Measurement Division also gets data on wage
and salary employment from the Bureau of Labor Statistics (BLS). Monthly employment
and quarterly wages for each county were obtained from this source.
The percent of the population in poverty for the year 1997 is also used in the study. County-level estimates from the Small Area Income and Poverty Estimates are used. The dataset contains information on family incomes and household composition from which the poverty rates are estimated. To determine poverty rates, the total income and size of households are compared to the poverty threshold set by the federal government. These data are obtained from the U.S. Census Bureau website. The source of the data is the Small Area Estimates Branch of the Housing and Household Economic Statistics Division, U.S. Bureau of the Census.

Counties are classified as nonmetropolitan or metropolitan in this study. Information on rural-urban county continuum codes is used to separate counties into these two categories. The classification codes describe counties by the degree of urbanization and nearness to a metropolitan area. The 10 county types vary from areas with a population of one million or more to areas with a population of less than 2,500. The rural-urban continuum codes were developed by the Rural Economy Division of the Economic Research Service, U.S. Department of Agriculture. Details of the classification used are provided in the appendix.

4.5 Summary of dataset

This chapter provides information on the type of data used in the survey. The chapter also contains an account of why county level data is used, the selection of respondents and the mailing schedule. It describes the content of the dataset used in the study, including both primary and secondary data. Descriptive statistics from the primary data are presented and sources of the secondary data are discussed.
CHAPTER 5

ECONOMETRIC RESULTS

5.1 Introduction

This chapter contains a discussion of the econometric results of this study. The first section is a description of the results from the interjurisdictional competition models. In the second section, the results from the race to the bottom model are discussed. The statistical tests conducted are then discussed. The last section is a summary of the results from the empirical models.

5.2 Empirical results

Two major econometric models are used in this study to test the hypotheses laid out in chapter one. Spatial lag models are used to test for intergovernmental competition in economic development and for a race to the bottom in the provision of redistributive services. A spatially lagged dependent variable in these models makes it possible to test for the presence of strategic interaction between county governments in the provision of local economic development activities and local public services.
5.2.1 Results of the intergovernmental competition models

Two interjurisdictional competition models are estimated with similar explanatory variables but different dependent variables. In one model, the dependent variable is the percentage of a county’s economic development budget used to finance the attraction of outside businesses. In the alternative model, the dependent variable is the number of economic development activities present in the county. The independent variables are the devolution status of the county, the metropolitan-nonmetropolitan status, the existence of an industrial park, the presence of an economic development professional on staff, the manufacturing share of total employment, the spatially lagged dependent variables and controls for state. The results of the regressions are provided in Table 5.1.

In the first interjurisdictional competition model, the coefficient on whether the county is in a state that has devolved welfare to the county level is not significant and has a negative sign. This is contrary to the expectations that the devolution of welfare would result in increased interjurisdictional competition.

Whether a county is in a metropolitan area or not is found to positively influence the percentage of a county’s economic development budget that is used to finance the attraction of new businesses. This coefficient is significant at the 1% level. This result indicates that, holding other variables constant, metropolitan counties use a greater percentage of their economic development budget to attract new investors. In the literature reviewed in chapter two, it is mentioned that metropolitan counties are likely to have more resources available for economic development as compared to
nonmetropolitan counties. Wolman and Spitzley (1996) state that larger cities are likely
to have more economic development programs or activities because they have more
professional capability on staff.

The existence of an industrial park has a positive sign and is significant at the 5%
level. The sign on this coefficient is as anticipated. The results indicate that, ceteris
paribus, the existence of industrial parks leads counties to devote a higher percentage of
their economic development budget to attracting new firms with the aim of filling vacant
lots in the industrial park. Counties that have industrial parks use a higher percentage of
their economic development budget to attract new firms as compared to counties that do
not have industrial parks. Development of industrial parks apparently leads to the
adoption of more aggressive economic development strategies and increased competition
between county governments to attract new businesses.

The presence of an economic development professional on staff has a positive
effect on the amount of a county’s economic development budget that is used to attract
new firms. This variable has the anticipated positive sign and is significant at the 1%
level. This result implies that, holding everything else constant, counties with an
economic development professional on staff use a higher percentage of their economic
development budget to attract new firms. Economic development professionals are likely
to be pro-economic development and so may encourage their counties to use a higher
percentage of their economic development budget to attract new firms with the aim of
increasing the number of jobs available for county residents.
The manufacturing share of total employment is hypothesized to positively influence the percentage of economic development budget used to attract new firms. However, the coefficient of this variable is not significant. It has the opposite of the sign anticipated.

The spatially lagged dependent variable has a positive sign as hypothesized. The coefficient of this variable, rho, is significant at the 5% level. This result implies that there is strategic interaction among counties in the choice of economic development activities. Counties are likely to use a higher percentage of their economic development budget on the attraction of new firms if other counties also use high percentages of their economic development budget for the same purpose.

Seven of the state fixed effect variables are significant at the 10% level. The R-squared and adjusted R-squared are 0.25 and 0.22, respectively, for the model with the percentage of economic development budget used for attracting new businesses as the dependent variable.

In the second interjurisdictional competition model, the variables that are significant and the signs of the coefficients are similar to those in the previous model. This model has a better fit since it has a higher R-squared (0.44) and adjusted R-squared (0.41). The dependent variable is an index of the sum of economic development activities offered by county governments.

Devolution status of a county does not significantly influence the number of economic development activities offered by county governments. It was anticipated that counties that have devolved welfare would offer more economic development activities than counties that have not devolved welfare.
The metropolitan status of a county is significant at the 1% level and has a positive sign. This result shows that, holding all other variables constant, metropolitan counties engage in a greater number of economic development activities compared to nonmetropolitan counties. This result is contrary to what is anticipated and may be due to the fact that nonmetropolitan counties have fewer financial resources to operate economic development programs. It is also possible that residents of nonmetropolitan areas have less desire for economic growth as compared to metropolitan residents.

The existence of an industrial park has a positive sign as hypothesized and so, holding everything constant, the existence of an industrial park is positively related to the number of economic development activities provided by counties. The coefficient on the industrial park variable is significant at the 1% level. This shows that counties with industrial parks engage in a greater number of economic development activities as compared to counties without industrial parks.

As in the first model discussed above, the presence of an economic development professional on staff significantly influences the number of economic development activities offered by counties. The sign is positive as anticipated and the variable is significant at the 1% level. The results imply that, ceteris paribus, counties with an economic development professional on staff engage in more economic development activities.

The percentage of a county’s economic development budget used to finance business attraction is used as an independent variable in the second model. The variable is significant at the 1% level and has the anticipated sign. The positive sign on the
variable indicates that, holding all other factors constant, counties that use a higher percentage of their economic development budget to finance the attraction of new businesses offer more economic development activities.

The poverty rates in a community also influences the number of economic development activities in a county. This variable is positive and significant at the 1% level. This result shows that, ceteris paribus, counties with higher poverty rates engage in more aggressive economic development activities and thus engage in a greater number of economic development activities.

The coefficient on the manufacturing share of total employment in counties is not significant in the model. The variable was hypothesized in this study to be positively related to the dependent variable. Counties with higher manufacturing shares of total employment were posited to increase the level of aggressiveness in economic development activities.

The spatially lagged dependent variable is significant at the 1% level and has the hypothesized positive sign. This result shows that, holding all factors constant, counties provide more economic development programs if neighboring counties are doing the same. This suggests that county governments look at the economic development strategies of other counties before they decide on their own economic development programs. The coefficients on the dummy variables, representing state fixed effects, are significant at the 10% level in 13 states.
In both models, all variables are significant except devolution status and the manufacturing share of total employment. Both models also have a significant lagged dependent variable (shown by rho in Table 5.1), thus indicating the existence of strategic interaction and competition in local economic development activities.

The interjurisdictional competition models were tested for spatial autocorrelation using Moran I test statistic, Wald's test, the Log Likelihood Ratio test and Lagrange Multiplier test. These tests are based on the least-squares residuals and the calculations involve the spatial weight matrix. The least-squares residuals exhibited spatial correlation. The Lagrange Multiplier error test for spatial correlation in the residuals of the spatial lag model had a high marginal probability of 0.57 indicating that spatial dependence in the residuals of the spatial model can be rejected. The results of the tests thus showed no spatial autocorrelation in the interjurisdictional competition models.
<table>
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<th>Variable</th>
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<th>Model Two</th>
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<td></td>
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<td></td>
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<td>0.5***</td>
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<td></td>
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<td>(3.46)</td>
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<td>1.3***</td>
</tr>
<tr>
<td></td>
<td>(1.97)</td>
<td>(9.61)</td>
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<td>Economic development professional</td>
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<td></td>
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<td>(10.87)</td>
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<td>Manufacturing share of total employment</td>
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<td></td>
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<td>attract new firms</td>
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</tr>
<tr>
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<td>0.07***</td>
</tr>
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<tr>
<td>Adjusted R²</td>
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<td>0.41</td>
</tr>
</tbody>
</table>

The asymptotic t-statistics are listed in the parentheses.

* signifies that the variable is significant at the 10% level.

** signifies that the variable is significant at the 5% level.

*** signifies that the variable is significant at the 1% level.

Table 5.1: Results for the interjurisdictional competition models.
5.2.2 Results of the race to the bottom model

In the race to the bottom model, the dependent variable is the number of redistributive services that have been cut back or are not provided over the past five years. The independent variables are a measure of competitive bidding among counties, metropolitan status of county, whether the state has devolved welfare to the county level, poverty rates, controls for state effects and the lagged dependent variable. This model is used to test the hypothesis that decentralized welfare leads to a race to the bottom in the provision of local public services. The results of this model are provided in Table 5.2. The model has R squared and adjusted R squared values of 0.17 and 0.14, respectively.

The competition variable is not significant. It was hypothesized that an increase in competitive bidding by county governments leads to a decrease in the provision of these redistributive services. The results do not, however, support this hypothesis.

The metropolitan status of a county negatively affects whether or not counties have cut back the number of redistributive services they provide. The sign is negative, as anticipated. The level of significance is 5%. Holding other factors constant, metropolitan counties are less likely to have cut back the number of redistributive services provided than nonmetropolitan counties.

The sign on the devolved welfare variable is negative and significant at the 1% level. From the results, it is concluded that devolved counties have not decreased the provision of redistributive services, assuming all other factors are held constant. It was hypothesized that devolved counties are more likely than nondevolved counties to have cut back the provision of redistributive services in an effort to keep taxes low and attract businesses that would provide jobs for welfare recipients.
The poverty rate is not significant in the model. Counties with high poverty rates were expected to have decreased the redistributive services provided. The coefficients of the dummy variables representing state fixed effects are significant for ten states at the 10% level.

The coefficient of the spatially lagged dependent variable is negative but not significant. This suggests that, ceteris paribus, there are no spatial spillovers among counties in the number of redistributive services that have been cut back over the past five years. Decisions of county governments to cut back redistributive services are apparently not influenced by the decisions on redistributive services provided in neighboring counties.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.5</td>
</tr>
<tr>
<td></td>
<td>(-0.91)</td>
</tr>
<tr>
<td>Interjurisdictional competition</td>
<td>-0.03</td>
</tr>
<tr>
<td></td>
<td>(-0.16)</td>
</tr>
<tr>
<td>Metropolitan status</td>
<td>-0.2**</td>
</tr>
<tr>
<td></td>
<td>(-2.07)</td>
</tr>
<tr>
<td>Devolved welfare</td>
<td>-0.4***</td>
</tr>
<tr>
<td></td>
<td>(-3.30)</td>
</tr>
<tr>
<td>Poverty rate</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(1.11)</td>
</tr>
<tr>
<td>Rho</td>
<td>-0.04</td>
</tr>
<tr>
<td>R²</td>
<td>0.17</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.14</td>
</tr>
</tbody>
</table>

The asymptotic t-statistics are listed in the parentheses.

* signifies that the variable is significant at the 10% level.

** signifies that the variable is significant at the 5% level.

*** signifies that the variable is significant at the 1% level.

Table 5.2: Results of the race to the bottom model.
For the race to the bottom model, the Likelihood Ratio and Wald tests for the spatial correlation in the linear regression residuals were not significant. The test for spatial autocorrelation was positive using Moran I test and Lagrange Multiplier error tests. The model was therefore re-estimated using a spatial error model and a linear regression model (since rho is not significant in the spatial lag model). The results of the spatial error and linear regression models are similar to those for the spatial lag model discussed earlier in this chapter. The coefficient for the spatial component of the spatial error model is not significant in the model. This confirms that there are no spatial spillovers in the number of redistributive services that have been cut back in the various counties over the past five years. Table 5.3 presents the results of the spatial error and linear regression models.
<table>
<thead>
<tr>
<th>Variable</th>
<th>Spatial Error Model</th>
<th>Linear Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept</td>
<td>-0.5 (-0.94)</td>
<td>-0.6 (0.51)</td>
</tr>
<tr>
<td>Interjurisdictional competition</td>
<td>-0.04 (-0.23)</td>
<td>-0.04 (0.17)</td>
</tr>
<tr>
<td>Metropolitan status</td>
<td>-0.2** (-2.1)</td>
<td>-0.2** (0.11)</td>
</tr>
<tr>
<td>Devolved welfare</td>
<td>-0.4*** (-3.27)</td>
<td>-0.3*** (0.12)</td>
</tr>
<tr>
<td>Poverty rate</td>
<td>0.01 (1.08)</td>
<td>0.1 (0.09)</td>
</tr>
<tr>
<td>Lambda</td>
<td>-0.04</td>
<td></td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.17</td>
<td>0.17</td>
</tr>
<tr>
<td>Adjusted $R^2$</td>
<td>0.14</td>
<td>0.14</td>
</tr>
</tbody>
</table>

The asymptotic $t$-statistics (for the spatial error model) and the standard error values (for the linear regression model) are listed in the parentheses.

* signifies that the variable is significant at the 10% level.

** signifies that the variable is significant at the 5% level.

*** signifies that the variable is significant at the 1% level.

Table 5.3: Regression results for alternative race to the bottom models.
5.3 Summary of results

Models of county government behavior are estimated in this chapter. Two interjurisdictional models are used to test for the presence of competitive interaction between counties. A race to the bottom model is used to test the hypothesis that decentralization of welfare leads to a race to the bottom in the provision of redistributive services.

The two interjurisdictional competition models have similar independent variables but different dependent variables. The dependent variables are the percentage of a county's economic development budget used to attract new firms and the number of economic development activities in which the county engages. Both interjurisdictional competition models show that counties offer more economic development programs and a higher percentage of their economic development budget to attract new firms if other counties are doing the same. The existence of an industrial park, the presence of an economic development professional on staff and the lagged dependent variables positively influence the percentage of a county's economic development budget used to attract new firms and the number of economic development activities in which the county government engages. In both models, devolution status, and the share of manufacturers in total employment are not significant. The results indicate that there is intergovernmental competition for economic development among county governments. The analysis does not support the hypothesis that decentralization of welfare to the county level leads to heightened competition for economic development activities. However, there is evidence
of policy spillovers among neighboring county governments. Counties with neighbors that engage in aggressive economic development activities are likely to also adopt an aggressive economic development strategy.

In the race to the bottom model, the number of redistributive services that have been cut back or are not provided is the dependent variable. Contrary to the hypotheses, competitive bidding does not lead to a cut back in redistributive services and devolution status is not significant. The poverty rate is also not significant. The metropolitan status variable has a negative sign, as anticipated, and is significant. The spatial lag coefficient is not significant, thus indicating the absence of spatial influences in whether a county cuts back its redistributive services or not. The results do not support the hypothesis that decentralized welfare leads to a race to the bottom in the provision of local public services.
CHAPTER 6

CONCLUSION AND RECOMMENDATIONS

6.1 Summary of study

This chapter is devoted to a summary of the major findings of the thesis. The first section gives a brief summary of the study. The next section is a summary of the results and the conclusions drawn from the analyses. The last section outlines some recommendations and suggestions for further research.

6.2 Overview of study and results obtained

In this study, county level data from 46 continental US states are used to test for changes in the aggressiveness of local economic development programs as a result of the decentralization of welfare. Key informants at the county level are used in the survey sent to all counties in the 46 states selected. The 46 states selected are those with functioning county governments. Primary data from the survey are supplemented with secondary data.

This study tests whether decentralized welfare leads to competition among county governments and a possible race to the bottom in the provision of local public services. Alternative models for interjurisdictional competition and a race to the bottom are
estimated and the results drawn from the analyses are summarized below. A spatial lag model is used as suggested by Brueckner (2000) and Saavedra (2000). Contiguity weight matrixes are used in the models since the hypotheses of this study is that a county's economic development activities are influenced by economic development activities of neighboring counties. Spatial autocorrelation tests are also conducted to justify the use of the models in question.

The results indicate that metropolitan status, presence of an industrial park and presence of an economic development professional on staff are positively related to the number of economic development activities in which county governments engage. These variables also positively influence the percentage of a county's economic development budget that is used to finance the attraction of outside businesses. The percentage of a county's economic development budget used to attract outside investors and the poverty rates in the county are positively related to the number of economic development activities offered in the county. The coefficients of the manufacturing share of total employment and devolution status were not significant in both models of interjurisdictional competition. The spatially lagged dependent variables are significant in both models thus indicating that county governments look at economic development activities in neighboring counties before they design their own economic development activities. Ceteris paribus, counties use a higher percentage of their economic development budget to attract new firms and offer a higher number of economic development activities if other neighboring counties are doing the same.

Results from the race to the bottom models indicate that competitive behavior and poverty rates do not significantly affect whether county governments have cut back
redistributive services over the past five years. Metropolitan counties are less likely than nonmetropolitan counties to have cut back the provision of redistributive services. The model also shows that devolution status significantly influences decisions by county governments to cut back redistributive services. The spatially lagged dependent variable is not significant thus indicating the absence of spatial spillovers in the decision of county officials to cut back the provision of redistributive services in the jurisdiction. Thus one county's decision to cut back the redistributive services it provides does not necessarily lead nearby counties to do the same.

6.3 Conclusion and implications of study

From the interjurisdictional competition models, it is concluded that there are spatial implications in the economic development activities of county governments. From these results the hypothesis that county governments choose their economic development activities in reaction to economic development policies in surrounding counties is accepted. The existence of an industrial park and the presence of an economic development professional on the county government's staff cause heightened aggressiveness in economic development activities provided by the county.

The results from the race to the bottom model do not support the hypothesis that decentralized welfare leads to a race to the bottom in the provision of local public services to be accepted. The hypothesis that counties with relatively aggressive intergovernmental competition are more likely to have cut back the provision of redistributive county government services over the past five years is also rejected.
6.4 Recommendations

A count of the economic development programs in a county is used as the measure for competition in the study. Further studies could explore using other measures of interjurisdictional competition. Also, the index of economic development activities in a county could be separated into strategies geared towards specific firms and strategies that are aimed at increasing human and social capital of the community.

The race to the bottom model could also be specified in alternative ways to determine whether other measures of economic development activity decrease with increased interjurisdictional competition. The effect of fiscal stress faced by local governments could be investigated in future research endeavors. It would also be worth investigating other specifications of the weight matrix.
ENDNOTES

1. States that have devolved welfare reform to the local levels include: AL, CA, CO, GA, MD, MI, MT, NJ, NY, NC, ND, OH, SC, TN, and WI.

2. Welfare recipients are given limited time on welfare (two years without work activity and a maximum of five years throughout an individual's whole lifetime) and are also required to work to be eligible for welfare benefits.

3. NACo refers to the National Association of Counties.

4. REIS data comes from the Regional Economic Information System of the Bureau of Economic Analysis, U.S. Department of Commerce.
BIBLIOGRAPHY


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APPENDIX

RURAL-URBAN COUNTY CONTINUUM CODES

The Economic Research Service of the U.S. Department of Agriculture has classified U.S. counties into 10 codes ranging from 0 - 9. These codes are based on urban/rural population characteristics and location with respect to metropolitan areas.

METROPOLITAN COUNTIES
0  Central counties of metropolitan areas of 1 million population or more
1  Fringe counties of metropolitan areas of 1 million population or more
2  Counties in metropolitan areas of 250 thousand to 1 million population
3  Counties in metropolitan areas of less than 250 thousand population

NONMETROPOLITAN COUNTIES
4  Urban population of 20,000 or more, adjacent to a metropolitan area
5  Urban population of 20,000 or more, not adjacent to a metropolitan area
6  Urban population of 2,500 to 19,999, adjacent to a metropolitan area
7  Urban population of 2,500 to 19,999, not adjacent to a metropolitan area
8  Completely rural or less than 2,500 urban population, adjacent to a metropolitan area
9 Completely rural or less than 2,500 urban population, not adjacent to a metropolitan area

Codes 0 - 4 and 6 are used for metropolitan counties and codes 5, 7, 8 and 9 for nonmetropolitan counties. These codes can be found at the Economic Research Service (USDA) website: http://www.ers.usda.gov.