FACTORS CONTRIBUTING TO THE FREQUENCY OF MUNICIPAL ANNEXATION AMONG MEDIUM-SIZED SOUTHERN U.S. CITIES

by

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Abstract

Purpose: The purpose of this explanatory study is to evaluate factors that contribute to the frequency of municipal annexation among select southern U.S. cities with populations between 25,000 and 50,000. The research method is analysis of aggregated data in order to explain factors contributing to the frequency of municipal annexation. Data on 160 cities from select southern U.S. states were compiled to understand the effect, if any, that form of government, age of municipality, demographic disparities between city and county, competition, and statutory annexation authority have on frequency of municipal annexation. Overall findings suggest that three of the five factors do not significantly contribute to the frequency of municipal annexation. However, competition and statutory annexation authority are found to be related to frequency of annexation. In particular, the effect of statutory authority on frequency of annexation is opposite of the expected effect.

About the Author

Colin C. Rice is a graduate of Texas State University – San Marcos with a Bachelor's degree in Political Science. Currently, he is employed at the Texas Commission on Environmental Quality as a budget analyst.

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Chapter 1. Introduction

Cities throughout the United States are facing a litany of issues, including rapid outward sprawl and a fiscal inability to provide municipal services to their citizens. In few other places are these problems more profound than in the South. Local governments across the country have instituted a host of responses to sprawl and inadequate service provision, such as regional governance. Though these approaches have facilitated governance in some cases, "the most salient expression of political integration in municipal government is annexation" (Dye 1964, 431). Much like regional governance approaches, such as county-city consolidation and metropolitan federation, annexation is not a panacea. However enticing annexation may be, it is not feasible for many cities. The question city administrators must ask is where and when is annexation a viable response to the problems facing U.S. cities. [1]

Empire City is a rapidly growing southern community of approximately 27,000 residents. As a modern day town, Empire City is relatively new. A once-quiet farming community, Empire City's population shot up from 17,000 people in 1990 to over 25,000 merely a decade later. The neighboring metropolis of Terminus had sprawled more than 25 miles to the north in a matter of ten years, fueled by burgeoning air cargo and banking industries. Newcomers to the region, as well as Terminus citizens fed up with their city's changing identity, were fascinated with the natural beauty and small-town charm of Empire City. What ensued was a massive influx of new residents in and around the once sparsely populated city.

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[1] For additional Texas State University Applied Research Projects concerned with local government issues see Schacherl, 2008; Zech, 2008; Lewis, 2007; Lindsey, 2005; Sinclair, 2005; Francois, 2004; Gunn, 2004.

City Manager Paul Bedford realized that Empire City lacked the proper infrastructure and amenities to serve the growing citizenry. He had discussed plans to consolidate planning efforts with nearby cities experiencing similar growth, but they could never agree upon the details of such an arrangement. In need of a response to the city's problems, Bedford turned to his professional training in urban planning for help. Remembering the words of a former professor, Bedford delved into the possibility of annexation to remedy the city's problems.

Growth on the city's fringe had become a nightmare. Residents of unincorporated areas were driving on Empire City streets and using its parks, yet they did not contribute to the property tax pool keeping these amenities functional. Additionally, the city could no longer afford to pay the fees to dump the ever-increasing tons of refuse into the Terminus landfill. Something had to be done before the city fell into disarray, with trash piling up on the curbs and potholes growing to the size of the Volkswagens driving over them.

The population surrounding Empire City was not dissimilar to the citizens of the city in regard to demographic makeup. In fact, income and race among these groups were mirror images. Thus, one might expect that the two groups could agree on integrating their governments. Over the previous three decades, many of the areas to the south of the city had started to adopt charters and incorporate themselves. On the other sides of the city, the people were receiving police, fire, solid waste, and wastewater services from the city but not footing their fair share of the bill.

City Manager Bedford believed that annexation may be the last available option. He proposed two separate plats of land for annexation. First, a high-end residential development being constructed to the west could pump some needed property taxes into the city's coffers, and

providing services to this area was feasible and efficient. Second, a rural tract of land to the north would be slated for the development of a municipal landfill. Following staff review of the proposed annexation and development of a service plan, the city government notified stakeholders and interested parties of a council meeting to discuss the plan. Several hundred residents of the city and fringe areas along with business leaders showed up at the meeting to voice a range of opinions. One man who owned property just outside the city near the new residential development explained his opposition to being annexed. "The county already provides road maintenance and sewer services. Why should I pay more taxes to fund something I already have?" Despite not being mentioned by the concerned man, the city had been providing services such as police and fire protection for several years without sufficient funding from the beneficiaries.

On the other side of the room, a woman who had lived in the city for 40 years fell into tears as she explained that her property taxes had increased so much that she may be forced to sell her home. Meanwhile, the increased taxes that were suffocating her were not able to improve the city's infrastructure problems. She supported the annexation of the residential area because it would help equal out the tax burden on her.

In Empire City's home state, the law indicates that final decisions on annexation belong to the people living within the city limits and the areas proposed for annexation. This "popular determination" statute was seen by many local government officials throughout the state as a possible barrier to their ability to annex. City Manager Bedford disagreed with this sentiment, claiming in a private conversation that "there are no incorporated places to our north or west that could compete for the land we need to stay fiscally sound." The public ultimately concurred with Bedford, deciding that annexation was the appropriate choice.

Annexation in the Real America

The circumstances in Empire City are not much different than those in many parts of the U.S. south and west. Though Empire City cannot be found on any southern U.S. state map, the problems the city faces plague most suburban and otherwise rapidly growing areas. Annexation may be the best option or possibly the last resort for many cities, yet it is not always the right course of action. By looking to the experiences of their peers in local government, cities can better understand what underlying factors contribute to the success or failure of an annexation.

Importance to City Administrators

Municipal annexation is an important element of local government operations in the United States and should be of great interest to city administrators. When considering a course of action to provide municipal services to an outlying area or to combat sprawl, decision makers benefit from understanding the characteristics of a workable annexation. The annexation experiences of other cities can serve as a guide book for administrators. They can see the conditions present in cities where annexations failed and where they succeeded. Then city leaders can decide whether their proposed annexation is feasible. Elected and appointed officials are wise to ask themselves one question before going through with any annexation decision: Have cities with characteristics similar to us successfully annexed, or is this action unrealistic?

Research Purpose

Motives for municipal annexation have received considerable attention from scholars over the years; however, less is known of the types of cities that annex more often than others.

What are some of the commonalities between these two groups of cities? Gaining a sense of common conditions and disparate factors that cities operate under is important to understanding the level of annexation activity performed by certain cities. The purpose of this explanatory study is to evaluate factors that contribute to the frequency of municipal annexation among select southern U.S. cities with populations between 25,000 and 50,000.

Chapter 2 reviews the scholarly literature on factors contributing to the frequency of municipal annexation. The literature review helps develop the conceptual framework for this study. Five formal hypotheses are developed to explain the research question. Chapter 3 introduces the methodology used to address the conceptual framework. This chapter includes a discussion of the sample population, the dependent and independent variables, units of analysis, and statistics used in this study. The sample includes 160 cities from select southern U.S. states with populations between 25,000 and 50,000 as of 2000. Chapter 4 displays the results of statistical tests along with an analysis of the data. Chapter 5 concludes the research with a discussion of the findings and suggestions for further research concerning the frequency of municipal annexation.

Chapter 2. Literature Review

Chapter Purpose

This chapter examines the scholarly literature on municipal annexation in the United States. First, municipal annexation is defined. Second, the goals and effects of annexation are examined. Third, conditions associated with annexation are reviewed. The information from this section guides the development of the hypotheses used to determine the factors that contribute to frequency of municipal annexation. The chapter concludes with a justification of the hypotheses.

Municipal Annexation Background

Municipal Annexation Defined

Municipal annexation has received considerable attention in the literature over the past fifty years. Carr and Feiock (2001, 459) maintain that annexation is the most commonly used form of municipal boundary expansion despite the availability of other forms, such as regional governance and city-county cooperation. As a "mega-policy," annexation is used by cities to "extend the implementation area of other development policies" (Jeffers 2003, 36). Through annexation, municipalities can extend their scope of influence to additional populations and land areas outside their jurisdiction. By capturing an unincorporated area via annexation, a city benefits from additional property taxes and the ability to regulate development through the extension of zoning laws.

"Annexation is the legal process by which municipalities add land to their boundaries" (Palmer & Lindsey 2001, 60). State annexation laws guide cities through the process by establishing their level of annexation authority. "Municipal annexation involves adding territory

and population from an unincorporated local unit to an area incorporated as a municipal government" (Carr & Feiock 2001, 460). The following excerpt from the San Marcos policy on annexation describes the procedures for annexation and the usual reasons cities annex.

> Annexation is the process by which a city extends its municipal services, regulations, voting privileges and taxing authority to new territory. Cities annex territory to provide urbanizing areas with municipal services and to exercise regulatory authority necessary to protect public health, safety and welfare. Annexation is also a means of ensuring that residents and businesses outside a city's corporate limits who benefit from access to the city's facilities and services share the tax burden associated with constructing and maintaining those facilities and services. Annexation may also be used as a technique to manage growth (City of San Marcos, Texas, n.d.).

A rapidly growing population in the U.S. has led to an increased incidence of municipal annexation. A study by Klaff and Fuguitt (1978, 2) found annexation was becoming the "rule" as six out of ten municipalities annexed territory during the 1950s as a means to increase population.

Extraterritorial Jurisdiction

Some states place constraints on a city's ability to expand their boundaries through annexation. A number of states, including Texas, apply extraterritorial jurisdictions (ETJ) to cities' boundaries as a way of regulating annexation activities. A 1963 state law in Texas requires annexation to occur within the extraterritorial jurisdiction of a municipality, which can extend as far as five miles from the municipality's current boundary (Fleischmann 1986a). Texas Local Government Code § 42.021 defines extraterritorial jurisdiction as "the unincorporated area that is contiguous to the corporate boundaries of the municipality" (Tex. Loc. Gov. Code § 42.021). Each city is allotted a specified ETJ corresponding to the number of inhabitants located in its city limits. Table 2.1 shows the legal breakdown in Texas of ETJ size by number of inhabitants in the city. Cities are permitted to annex land that falls within the range of their

established ETJ. ETJs are established, in part, so that competing municipalities have a clear understanding of which areas they can and cannot annex into their boundaries.

Table 2.1

Extraterritorial Jurisdictions in Texas

Number of Inhabitants	*Size of Extra-territorial Jurisdiction*
Fewer than 5,000	One-half mile
5,000 - 24,999	One mile
25,000 – 49,999	Two miles
50,000 – 99,999	Three and One-half mile
100,000 and over	Five miles

adapted from Tex. Loc. Gov. Code § 42.021

Extra-territorial jurisdictions are intended to act as a buffer between cities to lessen disagreement over who has the authority to annex a particular parcel. Many cities have used innovative measures to extend their ETJ. Cities sometimes annex a long, narrow tract of land as a tactic to extend their boundaries beyond other contiguous cities to reach another annexable tract of land (Fleischmann 1986a). By extending its boundary a city also expands its ETJ. The city of Fort Worth, Texas, for example, was able to extend its ETJ by annexing contiguous land along a narrow stretch of interstate highway north of the city. This newly annexed tract of land now has a five mile ETJ surrounding its border. Performing this action allows the city greater room for growth, even so far as extending into another county. Fort Worth's annexation accomplished this through the addition of land in the adjacent Denton County.

When a city annexes an unincorporated tract of land, the city is required to provide municipal services within a period specified by state law. Sometimes the city is not able to provide the needed services. In this case, the affected population may be able to deannex themselves and no longer be within the boundaries of the annexing central city.

Goals and Effects of Municipal Annexation

A city chooses to annex an unincorporated tract of land for reasons such as where the city is located in relation to other municipalities and the city's infrastructural and fiscal needs. Annexation can broaden the tax base of a city if the area proposed for inclusion has taxpaying residents or businesses. Some cities perform annexations to provide municipal services to residents in unincorporated fringe areas. Often the choice to annex boils down to whether the net benefit of expanding the tax base outweighs the costs of expanding service provision.

Cities Annex to Broaden Their Tax Base

A vast majority of annexations occur because cities want to expand their tax base in order to better fund municipal services. Rusk's study (2006) concluded that the ability to annex surrounding land is the key to a healthy municipal economy. Furthermore, the analysis revealed cities which annex at higher rates enjoy higher bond ratings. Mendoza (2007) notes that bond ratings are dependent on the size of the city. Those cities with larger populations tend to have greater resources to compete in the bond market, in effect lowering their interest rates and

increasing their capacity to borrow. The nexus here is that annexation almost always increases the population of the city. Hence, cities expect an increased tax base and bond rating after annexation—thus improving fiscal health. Cho (1969), however, did not find any significant financial benefits of annexing surrounding areas.

Annexation is a means for cities to ensure that people who benefit from city services pay their fair share (Liner & McGregor 2002). As people began to move away from the central cities and into the suburbs at a high rate following World War II, residents enjoyed lower taxes because outlying areas had a less developed, and thus less expensive, municipal infrastructure. Suburban residents could, however, enjoy some of the benefits from city services. For instance, they could drive on the city roadways to shop, work, and play, yet they did not help fund the cost of supporting the roads they used. The flight of residents to suburban areas further contributes to a decreased tax base in the central city. Jeffers (2003) points out that development outside of the city limits can shrink the tax base within the city to a level where it can no longer support the public service needs of the city. By annexing these areas into its jurisdiction, the city improves the average socioeconomic status of its citizens.

Several scholarly works have focused on the fiscal motives of annexation. Liner and McGregor (2002) contend that it is important for cities to annex growing, outlying areas in order to salvage their economic base and capture the wealth and economic activity of the burgeoning area. Facer (2006) echoes this statement in his assertion that cities choose annexation in order to capture economic growth outside of their existing boundaries.

Capturing economic growth outside of the city is not always accomplished through adding people to the city's tax base. At times, the area targeted for annexation is altogether void

of residents. Here, the purpose of annexation is to capture some other contributor to the tax base—business or infrastructure. Sometimes cities annex outlying areas because there are roads, bodies of water, airports, landfills, or similar features that will make the city more economically viable (Bromley & Smith 1973). The potential increase in the tax base when uninhabited places are annexed is typically greater than the fiscal benefits of annexing inhabited places.

Seated in one of the fastest growing counties in the nation, the city of Fort Worth exercised its option to annex an area rich in infrastructure. In 1989, Ross Perot legally removed his 2,500 acre tract of land from the small town of Westlake, Texas, creating the Alliance Corridor as a center for commercial and industrial development 15 miles north of Fort Worth. The centerpiece of the development is the commercially dedicated Alliance Airport, which serves as a major hub for Federal Express (FedEx). In an agreement with Perot, the City of Fort Worth secured its claim to annex the land once Perot was done with it (Houston Chronicle, May 16, 1997). In all, annexation of the Alliance Corridor brought more than 170 taxpaying corporations into the city's limits, such as Philips, Nestle, Nokia, and Mitsubishi.

Expanding the tax base is an important goal for cities. In order to broaden the tax base and remain fiscally viable, cities compete with each other to annex as much land as possible. A number of researchers suggest cities annex in order to keep other cities from reaping the fiscal benefits of the additional land.[2] Fleischmann (1986a) sees limiting competition for annexable land as the primary reason cities annex. He likens suburbs to parasites that survive off of the city but contribute nothing of substance to it. When annexation is not chosen by the central city to combat the effects of sprawl, new municipalities usually pop up where the population has relocated. Thus, annexation is a tool cities use to regulate growing, unincorporated areas without

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[2] See, for example, Carr and Feiock 2001; Fleischmann 1986a; Liner and McGregor 1996, 2002; and Rusk 2006.

the competitive threat of a newly incorporated municipality emerging. In doing so, they limit the political fragmentation resulting from multiple municipalities.

Cities Annex to Provide Services to Unincorporated Areas

According to Carr and Feiock (2001), extending public service provision to unincorporated areas is the key rationale used to justify municipal annexation. Other incentives for annexing may exist in certain situations, but providing municipal services to outlying areas is a common reason for annexation. In most cases, the area proposed for annexation lacks sufficient services or is without service altogether. Sometimes services in an adjacent unincorporated area are already provided by county government. When annexation occurs in these scenarios, the city simply takes over responsibility for service provision from the county.

"The major function of municipal governments is to provide services, and their ability to provide services depends on the economic base, institutions, and political and social forces" (Liner & McGregor 1996, 55). Service provision is the primary purpose of municipal governments, and annexation produces economies of scale whereby efficiency in service provision is enhanced (Carr & Feiock 2001). Thus, it is safe to say that cities actively seek actions that will enhance their ability to provide services to residents. Considering the demographics of the suburbs—greater wealth—annexation appears to be a viable method of increasing the base of taxable property, thus enhancing a city's ability to provide services.

Annexation creates economies of scale in service provision, meaning that municipalities can take advantage of efficiencies associated with larger scale production of service (Carr & Feiock 2001). Though residents in these outlying areas typically experience greater efficiency in service provision when plugged into the central city, they may prefer to remain unincorporated.

Often these residents would rather continue paying lower taxes and receiving the same level of service than increasing their costs to attain higher levels of services.

Proponents of Annexation

Though each situation differs, annexation is usually supported and promoted by the politicians in charge of providing services to outlying, fringe areas. In a 1986 study, Fleischmann (1986a) found that businesses, specifically builders and developers, were responsible for initiating 42% of annexations between 1940 and 1981. Typically, these businesses will develop land in the ETJ of the city and then seek annexation because they have already platted the land, meaning they develop as they wish. Meanwhile, cities initiated one-quarter of all annexations during the same period.

In their 2002 study, Liner and McGregor proposed that higher income residents in the fringe areas typically welcome annexation since they have the financial means to pay extra taxes. There is an assumption that the more disposable income people possess, the more services they will desire and expect. Therefore, they often favor annexation.

Opponents of Annexation

The opponents of annexation are usually residents in the fringe areas. As was discussed previously, residents of outlying areas often do not want to be annexed for fear of increased taxes. According to Feiock and Carr (2001), fringe residents often oppose incorporation into the central city based on the potential for higher taxes and less localized control. On the other hand, residents within the central city often oppose annexing new land and populations because of the possibility of decreased quality of service provision resulting from extending services to outlying areas. One way for fringe residents to successfully remain autonomous is to incorporate. By

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creating their own municipality, these outlying regions can avoid being annexed into the central city. However, as discussed later in this paper, state laws dictate which individuals and groups are eligible to be included in an annexation decision. Despite a preference for remaining unincorporated, residents in fringe areas do not always have the latitude to decide their fate.

Conditions Associated with Municipal Annexation

Most of the literature on municipal annexation tends to focus on the reasons cities annex and how this affects their fiscal situation and their ability to efficiently provide services. There are far fewer studies focused on determining which cities are annexing and what commonalities they share. The literature suggests several factors as determinants of annexation activity; various characteristics of the central city seem to be related to the frequency of annexation. Although the literature on this topic is limited, there is a sense among scholars that a "more detailed consideration of the characteristics of places that annex or fail to annex" is needed (Klaff & Fuguitt 1978, 11). The remainder of this section highlights characteristics associated with a city's likelihood of successfully performing an annexation. The most salient of these conditions form the hypotheses of this study.

Form of Government (H₁)

There are two main forms of municipal government in the United States: council-manager and mayor-council. Under the mayor-council form of government, a mayor is elected by the public and granted the authority to hire and fire city employees based on merit. In contrast, the council-manager form of government has a city council that appoints a city manager. The council-manager form of government runs much like a business, and the "voters,

council, and the city manager play the roles of stockholders, board of directors, and chief executive officer, respectively" (Hayes & Chang 1990, 167).

More than half of the cities in the U.S. employ the council-manager form of government. The city manager tends to be a professionally trained individual with an extensive knowledge of city functions and procedures. Dye (1964) maintains that the council-manager form of government is less subject to political influence, instead relying more so on a scientific approach to decision-making. More recent studies, though few in number, have reached similar conclusions (Liner & McGregor 2002). Though inconclusive, the literature suggesting the superiority of the council-manager form of government proposes that the city manager has a greater interest in performance, since his or her job and level of pay depend on productivity. Hayes and Chang (1990, 167) suggest "that a city manager has incentives similar to those of the manager of a profit maximizing firm and this should lead to higher relative efficiency and lower costs than a mayor-council form of government."

Previous studies on the frequency of annexation posit a relationship between the council-manager form of government and increased annexation activity (Dye 1964; Liner & McGregor 1996, 2001). The expertise of city managers, attributable to their professional training, suggests a superior understanding of the annexation process compared to mayors in the mayor-council form of government. Zech (2008), quoting Blodgett (1994), points out that the "council-manager form of government 'uniquely blends political and professional leadership,'" with the politically elected mayor empowering the city manager with authority for professional management of the city's affairs. Thus city managers would utilize this knowledge by annexing more often than their mayoral system counterparts. In addition, city managers' jobs hinge on their ability to

maximize service provision and reduce costs. City managers are more likely to annex to increase

their economic base compared to mayors in the mayor-council form. Thus it is expected that:

> H$_1$:   As compared to the mayor-council form, the council-manager form of
> government tends to engage more frequently in municipal annexation.

Age of Municipality (H$_2$)

The literature suggests there may be a relationship between the incidence of annexation

and the age of the city (Liner & McGregor, 2002). In particular, it has been assumed that cities

which have incorporated more recently will annex more frequently. Newer cities tend to be built

"post-automobile," meaning that residents' mobility is more dependent on motorized vehicles

(Wheeler 1965, 358). These cities have experienced rapid growth (surpassing 25,000 in

population) in the past fifty years.

Fleischmann (1986a) notes that the unincorporated surrounding areas grow in step with

the central city, and may incorporate or annexed by the central city. However, once

unincorporated areas incorporate and the municipalities surrounding the central city grow, the

ability of central cities to annex decreases because there is less land and population available to

annex. This situation forces many northern and eastern U.S. cities to annex less frequently than

their counterparts in the west and south (Cho, 1969). These cities tend to be older, and the land

surrounding their boundaries is more likely to be incorporated (Cho 1969). Boundaries of older

cities appear to be more established and less likely to change because contiguous, smaller cities

encase these older cities, leaving less unincorporated land available for central city boundary

expansion (Dye 1964; Klaff & Fuguitt 1978). In light of this, it is expected that:

H$_2$:   Newer cities (more recently surpassing a population of 25,000) tend to engage more frequently in municipal annexation.

Demographic Disparities (H$_3$)

The difference in demographic composition between the central city and its surrounding areas has been posited as a factor contributing to the incidence of annexation. In particular, Dye (1964) believes that when measures of social status and demography in the central city and fringe areas are similar, the likelihood of annexation increases. Conversely, when these measures differ greatly, the rate of annexation activity in the central city will decrease. Past studies relating to social disparities between central city and fringe areas "suggest that opposition to municipal annexation results from higher income and white residents of the targeted areas' rejecting the boundary change to prevent higher taxes, greater racial diversity, or decreased local control" (Feiock & Carr 2001, 397). The notion here is that similar groups of people are more willing to come together, while dissimilar groups are less likely to desire this cohesive arrangement. Specifically, central cities that are demographically similar to surrounding populations will have more success in performing annexations (Dye 1964; Klaff and Fuguitt 1978). For the purpose of this study it is expected that:

H$_3$:   Greater demographic difference between the central city and surrounding area tends to decrease frequency of annexation.

Competition for Annexable Land (H$_4$)

If the goals and outcomes of annexation include an enhanced economic base and improved efficiency in service provision, then it can be assumed that cities will attempt to annex

when possible. Of course this means that multiple cities in one region often attempt to add the same areas into their city boundaries. Therefore, cities must often compete to acquire annexable land (Rusk 2006). This competition can be so fierce that many cities resort to extending their boundaries along a narrow tract of land in order to expand their ETJ, and ultimately their boundary. The city of Fort Worth, Texas utilized this method when expanding to capture the Alliance Corridor. It annexed the land along Interstate 35 West until it reached the Alliance Corridor and later annexed even further north to the Texas Motor Speedway. In effect, the ETJ of Fort Worth leapfrogged other contiguous cities in order to capture the massive economic base of the Alliance Corridor and the Texas Motor Speedway.

As was the motive for Fort Worth's boundary expansion, annexation is a way for cities to exclude competing municipalities from acquiring unincorporated land. A city can stake its claim on a tract of land, excluding competing cities from incorporating this land into their jurisdictions (Feiock & Carr 2001, 391). Liner and McGregor (2002) posit a tendency for decreased annexation activity when competition for space is high. When there are multiple municipalities competing for a tract of land, there is a smaller chance that one particular municipality will be able to annex the land. Furthermore, Rusk (2006) notes that competition depends on the amount of land available for annexation. That is, the land available for annexation is usually considered developable and therefore potentially desirable for annexation. When the proportion of the unincorporated population (compared to the incorporated population) within the county is high, the availability of land for annexation is greater. Thus it is expected that:

H_4:   Greater competition for annexable land tends to decrease the frequency of annexation.

Statutory Annexation Authority (H₅)

Dillon's Rule[3] interprets states' authority as embodied in the Tenth Amendment to the

U.S. Constitution. It dictates local government authority to exercise powers only as they are

delegated by state law. Dillon's Rule tends to be viewed as being associated with weak local

autonomy, whereby a municipality has no authority to perform an action not expressly permitted

by state law. Local governments are creatures of the state and their livelihood depends on the

state. State laws authorize the powers that local governments possess, and dictate which actions

they may and may not perform. Grumm (1974) states that Dillon's Rule now has less of an

impact on state and local government relations because of the presence of political, economic,

and social forces in the twentieth century.

There is a vast amount of literature devoted to discovering the connections between state

annexation laws and the frequency of municipal annexation. The decision to annex or otherwise

alter a city's boundaries is "the product of actors' seeking particular outcomes within a local

context of existing governments and established rules governing boundary change" (Feiock &

Carr 2001, 383). Each state has its own statutes and rules that govern local government authority

to annex. In fact, there are even differences among laws within states. For instance, Texas

separates municipalities into two groups: home rule and general law cities. Home rule cities are

required to have populations in excess of 5,000 and must adopt a city charter (Texas Municipal

League 2003). A 1912 amendment to the Texas Constitution was significant in transferring

municipal powers from the legislature to the local government (Zech 2008). The authority of

home rule cities is broad, allowing them to perform any legal action not explicitly prohibited by

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[3] Dillon's Rule is named for John Forest Dillon, a 19th century Iowa Supreme Court justice. It is embodied in case law from *Clinton v. Cedar Rapids and the Missouri River Railroad*, 24 Iowa 255; 1868.

state law (Jeffers 2003). On the other hand, general law cities may only perform actions explicitly authorized by state or federal law, and nothing more (Jeffers 2003). Home rule cities in Texas have the authority to unilaterally annex any land that is contiguous with its borders and within its ETJ. This can be done without consent from the landowners. The requirements for general law cities to annex are much more stringent.

The differences between state laws guiding local government annexation authority have received great attention in the literature. The seminal work of Sengstock (1960), *Annexation: A Solution to the Metropolitan Area Problem*, developed a classification system for state annexation laws, which is most commonly used in the subsequent literature on municipal annexation. The Sengstock typology classifies state annexation laws based on which party makes the final decision to annex. Table 2.2 outlines the five categories created by Sengstock, of which each state will fall into one. Classification of state laws is not as straightforward as Sengstock's typology suggests; in fact, "most statutes provide for more than one approach to annexation, and statutes change frequently" (Palmer & Lindsey 2001, 60). Sengstock's typology was a preliminary categorization of state annexation laws, lacking any previous classification system to build on. "The Sengstock typology is useful primarily for distinguishing among particular features in state annexation statutes, but it fails to account for their complexity and generally underestimates the number of states that provide for some type of popular determination" (Palmer & Lindsey 2001, 71). When annexation statutes are categorized by type it is possible to control for a decision-making element that affects some cities but not others (Liner & McGregor 1996).

Table 2.2

Sengstock's Typology of Annexation Laws

Annexation Legislation Type	*Definition*
Judicial determination (JD)	State judiciary makes the decision
Legislative determination (LD)	Each annexation proposal is deliberated by state legislature or special provision in the state legislature
Municipal determination (MD)	Unilateral action of municipal governments
Popular determination (PD)	Referendum, petition by local residents, residents may be defined as municipal electorate, owners/inhabitants of annexed area, and/or electorate of diminished category
Quasi-Legislative determination (QL)	Independent, non-judicial board determines a proposed annexation

Source: adapted from Smirnova & Ingalls (2007)

Research[4] that utilizes the Sengstock typology attempts to determine which of the five types of statutes makes it easiest to annex and which makes it more difficult. Wheeler (1965) uses Texas and Rhode Island as examples of states on each extreme end of the statutory spectrum. Texas statutes are considered among the least restrictive, while Rhode Island statutes are more restrictive since the state has essentially frozen its cities' ability to alter their boundaries. However, the results of studies focused on state laws and annexation are mixed, inconclusively determining which statutes are most or least restrictive (Carr & Feiock 2001). Contrary to the conclusions reached by Wheeler and many others (Facer 2006; Fleischmann 1986b; Galloway and Landis 1986; Liner and McGregor 1996, 2002; and Smirnova and Ingalls 2007), Carr and Feiock (2001) suggest restrictive rules actually stimulate annexation. Instead of

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[4] Studies using or modifying the Sengstock typology include Facer 2006, Galloway and Landis 1986, Palmer and Lindsey 2001, Smirnova and Ingalls 2007; and Liner and McGregor 1996, 2002.

reducing frequency of annexation, "restrictive" rules (those requiring referenda) tend to stimulate smaller annexations since they are less likely to breed opposition. Dye's (1964, 433) analysis of annexation laws "confirmed the judgment that controlling statutes do not in themselves provide a satisfactory explanation for the success of annexation."

The literature is inconclusive on the effect of annexation statutes on frequency. Most studies found a relationship between statutory authority and frequency of annexation, however, the direction of effect is not consistent across studies. Thus it is expected:

H_5:   Municipal determination statutes influence the frequency of annexation.

Summary of Conceptual Framework

According to Shields and Tajalli (2006, 314), conceptual frameworks are used "to connect all aspects of empirical inquiry," and "act like a map that gives coherence to the enterprise." The conceptual framework structures the research, helping the researcher collect, organize, and analyze data. Table 2.3 illustrates the nexus between the formal hypotheses developed for this study and the sources of literature supporting the research purpose.

Table 2.3
Conceptual Framework

Research Purpose: The purpose of this explanatory study is to evaluate factors that contribute to frequency of municipal annexation among select southern U.S. cities with populations between 25,000 and 50,000.

Formal Hypotheses	*Supporting Literature*
H1: As compared to mayor-council form, the council-manager form of government tends to engage more frequently in municipal annexation.	Dye, 1964; Hayes and Chang, 1990; Liner and McGregor, 1996, 2002;
H2: Newer cities (more recently surpassing population of 25,000) tend to engage more frequently in municipal annexation.	Cho, 1969; Dye, 1964; Fleischmann, 1986a; Klaff and Fuguitt, 1978; Liner and McGregor, 2002; Wheeler 1965;
H3: Greater demographic difference between central city and surrounding area tends to decrease frequency of annexation.	Dye, 1964; Feiock and Carr, 2001; Klaff and Fuguitt, 1978; Liner and McGregor, 2002;
H4: Greater competition for annexable land tends to decrease frequency of annexation.	Carr and Feiock, 2001; Feiock and Carr, 2001; Liner and McGregor, 1996, 2002; Rusk, 2006;
H5: Municipal determination statutes influence state annexation statutes.	Carr and Feiock, 2001; Dye, 1964; Facer, 2006; Fleischmann, 1986; Galloway, and Landis, 1986; Liner and McGregor, 1996, 2002; Palmer and Lindsey, 2001; Sengstock, Frank 1960; Smirnova and Ingalls, 2007; Wheeler, 1965.

Chapter Summary

This chapter reviews the literature on municipal annexation, followed by a review of the reasons cities annex and the conditions associated with annexation activity. The purpose is to develop a conceptual framework for use in evaluating the factors that contribute to the frequency of municipal annexation.

Conclusion

Municipal annexation is a means cities use to extend their boundaries in order to expand their tax base and provide services to unincorporated areas (Carr & Feiock 2001). The literature, for the most part, agrees that these are the two most common reasons cities choose to annex. However, there is often opposition to annexation activities on the part of interested parties, such as residents in the central city and unincorporated area and public officials (Feiock & Carr 2001). On the other hand, there are many stakeholders who may favor annexation such as business interests and residents. Reasons for opposing or promoting annexation usually boil down to economic effects (Carr & Feiock 2001). Those who oppose annexation often believe that the increased cost is not a reasonable trade-off for improved service provision.

Much of the literature on municipal annexation attempts to discover conditions and factors associated with frequency of annexation. Dye (1964) was one of the first to assess conditions associated with the incidence of annexation. He posited a relationship between the central city's form of government and the rate of annexation activity (Dye 1964). In short, his hypothesis assumed that having a city manager will increase a city's rate of annexation. Liner and McGregor (1996, 2002) performed several subsequent studies, including examination of the form of local government as a variable contributing to annexation. The assumption that the form of government affects frequency of annexation is the basis for the first formal hypothesis.

In his research Dye (1964) also promoted the assumption that the age of a municipality contributes to frequency of annexation in his research. Wheeler (1965) utilized this same variable as a control in his assessment of annexation laws and success. These studies assumed that older cities were less likely to annex land and populations than newer, rapidly growing cities (Dye

1964; Wheeler 1965). Additionally, Dye (1964) expected, and found to some degree, that disparities in social status and demographics between a central city and its suburbs would decrease the rate of municipal annexation. Age of municipality and demographic disparity between central city and surrounding area form the basis for the second and third formal hypotheses, respectively.

Rusk (2006) added competition for annexable land to the conditions associated with annexation. Cities compete for developable land. They annex to keep competing municipalities from annexing the land they desire to add to their territory. Liner and McGregor (2002) observed an increase in competition between cities as negatively affecting the frequency of annexation activity. This assertion is the basis of the fourth formal hypothesis.

An extensive literature is devoted to the link between annexation laws and the frequency of annexation. Sengstock's (1960) book gives the first example of a classification of annexation laws by state. Following studies have overwhelmingly adopted this classification system. Palmer and Lindsey (2001) expand on the Sengstock typology by differentiating between laws within states, as well. In either form, the classification of annexation laws is used to differentiate between statutes based on the ease or difficulty to annex (Wheeler 1965). The fifth and final formal hypothesis is based on the expectation that municipal determination statutes have less restrictive requirements, thus increasing the frequency of municipal annexation.

The following chapter outlines the methodological approach to answering the research question at hand. An examination of the data collection method is presented. Discussion of the selected variables, sample population, and statistics concludes the chapter.

Chapter 3. Methodology

Chapter Purpose

This chapter shows how the hypotheses that explain factors associated with the frequency of municipal annexation are tested. The methodology—analysis of existing data—is described in detail. Table 3.1 links the data to the research purpose.

Table 3.1
Operationalization of the Conceptual Framework

Dependent Variable	+/-	Measurement	Data Source
Frequency of Municipal Annexation		# of annexations performed between 1990 and 2000 (Jan. 1,1990-Dec. 31, 1999)	U.S. Census - Boundary and Annexation Survey (BAS)
Independent Variables			
Form of Government (H_1) • City manager form	+	1 = Council-Manager 0 = Mayor-Council, as of 2000	ICMA Municipal Year Book, 2000
Age of Municipality (H_2) • Cities more recently surpassing 25,000 population	+	# of decades since pop. surpassed 25,000, as of 2000	U.S. Census
Demographic Disparities (H_3) • High racial disparity between center city and county	-	difference between % minority in city and % minority in county	U.S. Census
Competition (H_4) • High level of competition between cities	-	# of incorporated places in county	National Association of Counties
Statutory Authority (H_5) • MD state	+/-	1 = MD* 0 = JD, PD, LD, QL*	Sengstock, 1960; Palmer & Lindsey, 2001

* MD= municipal determination, JD= judicial determination, PD=popular determination, LD=legislative determination, QL= quasi-legislative determination

Method of Data Collection

Analysis of existing data is well-suited for addressing the research question of this study. Data on U.S. municipalities, in general, and their frequency of annexation are available through a variety of sources. Therefore, this study analyzes existing aggregate data from the U.S. Census Bureau, the International City/County Manager's Association *Municipal Year Book*, the National Association of Counties, and the Sengstock typology. Analysis of existing data is "particularly significant because existing statistics should always be considered at least a supplemental source of data" and "can also provide the main data for social scientific inquiry" (Babbie 2004, 324).

Since the data have been previously compiled, the next step is to find the appropriate sets of data and synthesize these to confront a particular research question. For this study, the limited amount of time available lends itself to an analysis of existing aggregate data. One weakness associated with this method is that necessary data may not be available in previously compiled datasets. Fortunately, reputable data are available to construct all variables used in this study.

Dependent Variable

The dependent variable, frequency of municipal annexation, is measured by the number of annexations performed by each municipality during the 1990s. Data for this variable are derived from the U.S. Census Bureau's Boundary and Annexation Survey for 2000. The results of this study are compiled on a decennial basis and represent annexation frequency for incorporated places in the United States. The Number of annexations performed during the study period range from 0 for many to 188 for one particular city.

Independent Variables

Previous scholarly literature has suggested a possible association between frequency of municipal annexation and each of the five independent variables selected for this study. These variables are chosen based on either their mixed results in past studies or varying degrees of support/non support in past studies focused on annexation frequency.

Municipal form of government (H_1) is a dichotomous variable indicating whether the council-manager or mayor-council form is used. Council-manager cities are assigned a value of 1 and mayor-council cities are assigned a value of 0. A positive effect on the frequency of annexation is expected when the council-manager form of government is employed. Data on form of government are taken from the International City/County Manager's Association *Municipal Year Book 2000*.

The second hypothesis, age of municipality (H_2), refers to the number of decades that have passed since each city surpassed 25,000 in population, as of 2000. Age of municipality is measured by determining how many decades have passed since its population reached 25,000, according to U.S. Census 2000. For example, a city surpassing the population marker in the 1950 decennial census would be assigned a value of 5 because five decades had passed.

The variable demographic disparity (H_3) assesses the effect that racial differences between city and county have on the frequency of municipal annexation. Demographic disparity is measured by the percentage difference between the minority population of the city and its county. Data are derived from the U.S. Census 1990 to account for the impact of disparities observed at the beginning of the study period. A smaller difference between the percentage of

minority residents in the city and the county is expected to positively affect the frequency of municipal annexation.

Competition between cities for annexable land (H_4) is measured by the number of incorporated areas within each city's home county. The greater the competition, or number of cities, the lesser the frequency of municipal annexation expected. This measure is derived from data available on the National Association of Counties (NACo) Web site, listing all incorporated places within each county.

The variable statutory authority (H_5) refers to state laws granting annexation authority. Each state in this study is categorized by the ease or restrictiveness of their annexation laws, based on the typology developed by Sengstock in 1960. Data for this hypothesis come from a revised categorization of state annexation laws by Palmer and Lindsey (2001). Statutory authority granting municipal determination is assigned a value of 1, and is expected to be related to an increased frequency of annexation. All other legal categories are assigned a value of 0.

Population

The unit of analysis consists of select southern U.S. municipalities.[5] To control for geographic differences, cities from this region are chosen because of their similar population growth rates in recent decades. Compared to states in the Northeast and Midwest, southern states have experienced rapid population growth. Since a vast majority of metropolitan growth takes place outside of the central city, it is expected that annexation will be utilized more frequently in rapidly growing cities as a means to capturing growth. As well, southern cities tend to have more

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[5] The southern states are: Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas, and Virginia.

land available for annexation since their boundaries have not been established for as long as those in older regions of the U.S.

The cities in this study were selected using stratified sampling in order to assess a homogeneous stratum of the population. First, cities are stratified by geographic location, narrowing the study to include only cities in the southern states. Then the cities are further stratified to include populations between 25,000 and 50,000, as of Census 2000. The total number of cities involved in this study is $N = 160$.

Municipalities that operate under consolidated city/county governments or a county commission are removed from the study because their annexation authority differs greatly from traditionally-managed cities. Table 3.2 shows the cities that are removed from analysis based on the presence of a non-traditional form of government or missing data. The set of cities chosen for analysis are found in Table 3.3, including the value of all variables for each city.

Table 3.2
Excluded Municipalities

Municipality	*Reasoning*
Bessemer, AL	County commission form
Gadsden, AL	County commission form
Cleveland, TN	County commission form
Vicksburg, MS	County commission form
Pharr, TX	County commission form
Houma, LA	County-city consolidated
Jeffersontown, KY	Louisville Metro Government
Charlottesville, VA	Independent city
Danville, VA	Independent city
Harrisonburg, VA	Independent city
Manassas, VA	Independent city
Petersburg, VA	Independent city
Palm Coast, FL	Incorporated in 1999

Statistics

     Existing data are used to test the five formal hypotheses. Multiple regression analysis is

conducted to determine the impact of each independent variable on frequency of annexation

among sample municipalities. This statistical method is used to analyze the data, determining

whether the hypotheses are supported or rejected. Multiple regression accounts for the

simultaneous effects of multiple independent variables on the dependent variable (Babbie 2004,

416). The Statistical Package for Social Sciences (SPSS) is used to run the multiple regression

analysis.

Table 3.3
Data Matrix Used to Test Hypotheses

Municipality	State	Pop.	% Land Annexed (Alt. DV)	# Annex (DV)	Form (H$_1$)	Age (H$_2$)	Demographic Disparity (H$_3$)	Competition (H$_4$)	Legal Auth. (H$_5$)
Auburn city	AL	43,308	4.81	60	1	2	-3.9	8	0
Florence city	AL	36,287	2.69	13	0	4	10.5	7	0
Homewood city	AL	25,117	0.00	0	0	0	-23.0	36	0
Madison city	AL	29,326	7.97	96	0	0	-1.8	6	0
Phenix City city	AL	28,447	6.59	98	1	4	12.1	5	0
Prattville city	AL	25,685	0.00	1	0	0	-4.1	5	0
Prichard city	AL	28,641	0.75	1	0	4	48.0	10	0
Vestavia Hills city	AL	30,534	0.41	5	0	0	-22.0	24	0
Conway city	AR	43,447	8.15	20	0	1	4.2	11	0
Hot Springs city	AR	35,863	0.33	2	1	5	10.4	5	0
Jacksonville city	AR	29,961	27.80	2	0	2	-6.5	9	0
Rogers city	AR	39,596	6.69	19	0	0	8.0	18	0
Springdale city	AR	46,672	3.13	10	0	1	10.8	31	0
Texarkana city	AR	27,837	34.26	45	1	0	8.5	3	0
West Memphis city	AR	27,674	11.21	4	0	3	7.0	12	0
Altamonte Springs city	FL	41,381	0.45	9	1	1	4.6	7	0
Apopka city	FL	27,443	16.92	177	0	0	-1.4	13	0
Aventura city	FL	25,267	0.00	0	1	0	-17.3	33	0
Bradenton city	FL	49,516	11.98	18	0	3	10.7	6	0
Coconut Creek city	FL	43,592	0.00	1	1	1	-15.9	30	0
Cooper City city	FL	28,267	1.72	9	1	0	-18.7	30	0
Coral Gables city	FL	42,805	0.23	1	1	4	-15.4	33	0
Dania Beach city	FL	27,293	0.00	2	1	0	0.3	30	0
Dunedin city	FL	35,977	0.77	13	1	2	-9.3	24	0
Fort Pierce city	FL	37,738	1.16	188	1	1	31.2	3	0
Greenacres city	FL	27,833	2.77	17	1	0	-2.7	37	0
Hallandale Beach city	FL	34,282	0.00	0	1	2	-6.9	30	0
Homestead city	FL	31,909	0.00	1	1	1	15.5	33	0
Jupiter town	FL	39,422	4.40	14	1	0	-14.4	37	0
Key West city	FL	25,478	0.00	0	1	0	7.3	4	0
Kissimmee city	FL	48,016	6.65	13	1	1	17.1	2	0
Lake Worth city	FL	35,663	0.00	2	1	2	15.3	37	0
Lauderdale Lakes city	FL	31,229	0.00	0	0	2	46.4	30	0
North Lauderdale city	FL	38,523	0.51	1	1	1	20.3	30	0
North Miami Beach city	FL	40,786	0.00	0	1	4	29.8	33	0
Oakland Park city	FL	30,966	0.00	0	1	1	4.4	30	0
Ocala city	FL	45,909	9.35	31	1	2	13.0	5	0
Ormond Beach city	FL	36,405	1.63	11	1	1	-7.0	16	0
Oviedo city	FL	26,326	6.03	18	1	0	0.3	7	0
Palm Beach Gardens city	FL	36,266	0.02	2	1	0	-13.2	37	0
Panama City city	FL	36,585	16.98	64	1	2	10.7	8	0
Pinellas Park city	FL	46,852	2.03	99	1	2	-3.5	24	0
Plant City city	FL	29,916	0.22	1	1	0	7.0	3	0
Port Orange city	FL	46,252	4.98	39	1	1	-8.3	16	0
Riviera Beach city	FL	29,888	0.00	0	1	2	52.7	37	0
Sanford city	FL	38,696	3.04	44	1	1	24.1	7	0
Titusville city	FL	40,691	6.67	12	1	4	3.1	17	0

Municipality	State	Pop.	% Land Annexed (Alt. DV)	# Annex (DV)	Form (H₁)	Age (H₂)	Demographic Disparity (H₃)	Competition (H₄)	Legal Auth. (H₅)
Wellington village	FL	38,826	10.80	3	1	2	-8.3	37	0
Weston city	FL	49,286	12.98	1	1	1	-17.5	30	0
Winter Haven city	FL	27,100	12.49	41	1	1	11.3	18	0
Winter Park city	FL	27,774	0.14	6	1	0	-13.4	13	0
Winter Springs city	FL	31,046	4.17	5	1	0	-4.9	7	0
Alpharetta city	GA	37,983	1.59	7	1	0	-32.1	11	0
Dalton city	GA	27,921	6.77	44	0	0	27.1	4	0
East Point city	GA	40,033	0.00	0	1	4	35.5	11	0
Gainesville city	GA	25,891	7.16	63	1	0	24.8	7	0
Hinesville city	GA	30,446	3.64	14	0	0	7.9	7	0
LaGrange city	GA	26,212	4.03	18	1	1	16.2	3	0
Peachtree City city	GA	31,580	0.09	1	1	0	-9.3	5	0
Rome city	GA	35,471	3.81	48	1	6	20.5	2	0
Smyrna city	GA	44,094	11.29	51	0	1	12.4	7	0
Valdosta city	GA	44,280	3.31	35	1	4	15.3	5	0
Warner Robins city	GA	49,117	11.36	93	0	3	-0.1	2.5	0
Bowling Green city	KY	49,363	10.25	13	1	4	7.0	5	1
Covington city	KY	43,370	0.00	0	1	12	6.5	18	1
Frankfort city	KY	27,722	0.27	2	1	2	6.1	1	1
Henderson city	KY	27,413	2.33	6	1	1	4.0	3	1
Hopkinsville city	KY	30,131	1.42	6	0	2	7.4	6	1
Paducah city	KY	26,312	0.00	0	1	7	14.1	3	1
Richmond city	KY	27,530	19.11	16	1	0	5.0	2	1
Alexandria city	LA	46,188	4.92	30	0	6	23.7	10	0
New Iberia city	LA	32,663	4.91	5	0	4	8.0	3	0
Slidell city	LA	25,243	4.32	53	0	2	2.4	7	0
Clinton city	MS	25,032	0.00	0	0	0	-41.6	8	0
Columbus city	MS	25,969	0.00	0	0	3	11.6	3	0
Greenville city	MS	41,633	4.98	2	0	5	2.7	5	0
Hattiesburg city	MS	44,837	0.37	2	0	5	23.8	2.5	0
Meridian city	MS	39,968	0.00	0	0	7	13.9	2	0
Pascagoula city	MS	26,200	0.00	0	1	4	7.7	4	0
Southaven city	MS	28,949	0.83	1	0	0	-9.4	5	0
Tupelo city	MS	34,211	0.00	0	0	1	3.3	7	0
Burlington city	NC	45,656	0.00	0	1	4	5.1	10	1
Chapel Hill town	NC	47,830	0.00	0	1	3	-10.4	2	1
Goldsboro city	NC	39,272	0.00	1	1	4	21.3	7	1
Hickory city	NC	37,452	0.00	0	1	1	12.4	7.7	1
Huntersville town	NC	25,470	32.98	1	1	0	-23.6	9	1
Kannapolis city	NC	36,948	0.00	0	1	6	4.8	7	1
Monroe city	NC	27,109	0.00	0	1	0	25.4	12	1
Salisbury city	NC	27,601	0.79	1	1	0	24.9	9	1
Wilson city	NC	44,789	1.97	19	1	4	12.2	7	1
Aiken city	SC	25,152	3.09	55	1	0	5.1	10	0
Anderson city	SC	25,633	4.78	19	1	4	18.4	9	0
Florence city	SC	30,588	9.66	62	1	3	4.7	9	0
Goose Creek city	SC	30,163	0.44	24	1	0	-12.1	11.5	0
Hilton Head Island town	SC	33,858	0.00	0	1	0	-9.7	5	0
Mount Pleasant town	SC	48,105	17.35	77	0	1	-25.7	15	0
Rock Hill city	SC	49,960	8.58	64	1	4	19.1	9	0

Municipality	State	Pop.	% Land Annexed (Alt. DV)	# Annex (DV)	Form (H₁)	Age (H₂)	Demographic Disparity (H₃)	Competition (H₄)	Legal Auth. (H₅)
Spartanburg city	SC	39,860	0.05	4	1	7	29.0	14	0
Summerville town	SC	27,918	9.55	48	0	0	-9.2	10.3	0
Sumter city	SC	40,499	4.02	112	1	1	0.4	3	0
Bartlett city	TN	40,624	4.29	8	0	1	-46.9	8	1
Brentwood city	TN	26,104	14.84	16	1	0	-2.5	5	1
Bristol city	TN	25,229	17.59	57	1	0	1.4	4	1
Collierville town	TN	32,866	0.00	0	0	0	-44.3	8	1
Columbia city	TN	33,202	0.68	7	1	2	10.1	3	1
Cookeville city	TN	25,913	0.18	5	1	0	4.8	4	1
Franklin city	TN	44,905	15.73	19	0	0	7.5	5	1
Germantown city	TN	37,667	0.28	2	0	1	-47.4	8	1
Hendersonville city	TN	40,923	1.32	29	0	2	-1.7	6	1
Kingsport city	TN	45,052	2.00	25	1	4	3.6	4.5	1
Morristown city	TN	25,720	1.58	51	1	0	11.3	3	1
Oak Ridge city	TN	27,387	0.02	1	1	6	7.3	4	1
Smyrna town	TN	27,191	4.43	19	0	0	-2.7	4	1
Allen city	TX	43,619	1.67	4	1	0	-5.9	25	1
Bedford city	TX	47,152	0.00	0	1	1	-7.9	34	1
Big Spring city	TX	25,233	0.47	2	1	0	16.3	3	1
Cedar Hill city	TX	32,110	2.84	3	1	0	24.4	21	1
Cedar Park city	TX	26,075	29.47	9	1	0	-0.9	15	1
Cleburne city	TX	26,061	17.05	15	1	0	7.7	11	1
Conroe city	TX	38,632	42.20	29	0	1	21.6	15	1
Coppell city	TX	35,958	0.00	0	1	0	-4.3	29.5	1
Copperas Cove city	TX	29,592	10.94	7	1	0	13.5	6.7	1
Deer Park city	TX	28,520	0.00	0	1	1	-15.7	31	1
Del Rio city	TX	33,871	9.03	4	1	2	19.3	1	1
DeSoto city	TX	37,647	0.00	0	1	1	24.0	25	1
Duncanville city	TX	36,071	0.00	0	1	2	9.0	25	1
Edinburg city	TX	48,472	20.75	3	1	1	24.0	22	1
Euless city	TX	45,976	1.53	2	1	1	4.2	34	1
Farmers Branch city	TX	27,508	0.00	0	1	0	-5.5	25	1
Friendswood city	TX	29,037	0.00	0	1	0	-12.5	22	1
Frisco city	TX	33,708	30.00	157	1	0	-4.1	29.5	1
Georgetown city	TX	28,466	39.25	36	1	0	2.4	13	1
Grapevine city	TX	42,059	0.03	1	1	1	-8.9	28	1
Haltom City city	TX	39,018	0.00	0	1	3	2.9	34	1
Huntsville city	TX	35,115	9.90	2	1	1	8.7	3	1
Hurst city	TX	36,290	0.10	1	1	3	-6.2	34	1
Keller city	TX	27,345	0.00	1	1	0	-14.0	34	1
Kingsville city	TX	25,575	7.46	1	1	1	21.4	3	1
La Porte city	TX	31,880	0.00	0	1	1	-7.0	31	1
Lake Jackson city	TX	26,386	0.27	0	1	0	-2.0	23	1
Lancaster city	TX	25,894	0.00	1	1	0	35.2	25	1
League City city	TX	45,447	0.00	0	1	1	-6.4	22	1
Lufkin city	TX	32,904	2.62	4	1	2	23.3	6	1
Mansfield city	TX	28,031	0.00	0	1	0	1.3	17.7	1
Mission city	TX	45,480	13.24	3	1	1	19.7	22	1
Nacogdoches city	TX	30,009	0.95	5	1	2	15.4	5	1
New Braunfels city	TX	38,217	12.08	5	1	1	9.6	6	1

Municipality	State	Pop.	% Land Annexed (Alt. DV)	# Annex (DV)	Form (H₁)	Age (H₂)	Demographic Disparity (H₃)	Competition (H₄)	Legal Auth. (H₅)
Paris city	TX	25,897	34.58	6	1	1	10.8	7	1
Pearland city	TX	37,472	37.53	16	1	0	-9.0	23.7	1
Rowlett city	TX	44,503	6.93	3	1	0	0.5	15.5	1
San Juan city	TX	26,525	28.64	10	1	0	16.2	22	1
San Marcos city	TX	35,720	2.20	3	1	1	18.8	7.7	1
Sherman city	TX	35,095	2.75	11	1	4	11.6	16	1
Socorro city	TX	27,680	0.00	0	0	0	20.1	6	1
Texarkana city	TX	34,792	13.67	6	1	4	14.0	11	1
Texas City city	TX	41,550	80.13	3	0	4	19.9	7.5	1
The Colony city	TX	26,549	13.87	2	1	0	0.6	34	1
Weslaco city	TX	27,915	3.07	6	1	0	22.4	22	1
Blacksburg town	VA	39,588	3.30	1	1	2	5.4	3	0
Leesburg town	VA	28,311	0.00	0	1	0	-5.1	8	0

In table 3.3, "# Annex" is the dependent variable, referring to the number of annexations that took place during the 1990s. Form refers to the form of government, used with 1 for council-manager and 0 for mayor-council. Age refers to the number of decades that had passed since the population surpassed 25,000, as of 2000. Demographic disparity is the difference between the percentage of the city that is minority and the percentage of the county that is minority. Competition refers to the number of incorporated places within each city's county (or average of counties if there are multiple). Finally, legal authority is the dichotomous variable representing the type of state law governing cities' annexation decisions (1 for municipal determination, 0 for other).

Chapter Summary

This chapter presents the methodology used to determine factors that contribute to the frequency of municipal annexation among medium-sized southern U.S. cities. Multiple regression analysis is used in order to take into account the effect of more than two independent variables on a single dependent variable. In the following chapter, the results of the multiple regression analysis are presented.

Chapter 4. Results

Chapter Purpose

This chapter presents the results of the multiple regression analysis used to explain

factors that contribute to the frequency of municipal annexation among select southern U.S.

cities with populations between 25,000 and 50,000. Table 4.1 shows the correlation between

independent variables, followed by descriptive statistics in table 4.2.

Table 4.1
Frequency of Annexation: Correlation Matrix

	# Annex.	Form	Age	Dem. Disp.	Competition	Stat. Auth.
# Annex.	1	-.090	-.065	.045	-.187*	-.253**
Form		1	-.036	.101	.223**	.246**
Age			1	.310**	-.188*	-.075
Dem. Disp.				1	-.166*	.007
Competition					1	-.008
Stat. Auth.						1

* significant at α = .05
** significant at α = .01

Correlation

Correlation quantifies the relationship between two independent variables. As table 4.1

displays, the relationships between independent variables are relatively weak. The strongest

relationship is between age of a municipality and demographic disparity (.310), meaning 31% of

the variance is shared by the two variables. Multiple regression analysis proves to be an

appropriate next step since correlations are weak.

Table 4.2
Frequency of Annexation: Descriptive Statistics

Variable	Range	Mean	Median	Standard Deviation
# of Annexations (DV)	0-188	17.6	4.0	31.7
Form of Government (H₁)	CM or MC	--	--	--
Age of Municipality (H₂)	0-12	2	1.0	2.0
Demographic Disparity (H₃)	-47.4 - 52.7	+/- 4.6	5.1	16.4
Competition (H₄)	1-37	14.0	9.0	11.1
Statutory Authority (H₅)	MD or other	--	--	--

Multiple Regression Analysis

The results of the multiple regression analysis revealed a weak linear relationship between the dependent variable, frequency of municipal annexation, and the independent variables collectively. Analysis of the results indicates an R^2 value of .070, meaning merely 7% of the variability in the dependent variable is explained by the five hypotheses. Of the conceptual framework's five elements only, two returned statistically significant results: competition and statutory authority. The F statistic is significant (p=.007, >.05), indicating there is a linear relationship between frequency of municipal annexation and the five independent variables. Table 4.3 shows the results of the multiple regression analysis.

Table 4.3
Frequency of Annexation: Multiple Regression Results

Independent Variable	Coefficient	Significance
Form of government	-1.628	.766
Age of municipality	-1.669	.164
Demographic disparity	-.012	.937
Competition	-.456	.035*
Statutory authority	-14.219	.002*
Constant	33.424	.000*
Adjusted R^2	.070	
F statistic	3.318	.007*

- $N = 160$

* significant at $\alpha = .05$

Findings from the regression analysis give some insight into the factors that contribute to municipal annexation despite the fact that three of the hypotheses were not supported. The form of government, age of municipality, and demographic disparities between city and county were found to have no significant effect on frequency of annexation.

Form of government (H_1) was postulated to have a positive effect on annexation frequency when the council-manager form is employed. The results did not support this hypothesis, in fact, there was very little observed evidence suggesting any effect in this sample. Reasons for the lack of significant difference may be contingent on the fact that contemporary mayors are not at a disadvantage regarding management ability, as was posited in Dye's 1960 research and subsequent studies. Guidance on annexation decisions and a better understanding of

this municipal option may contribute to a shrinking gap in the use of annexation between mayors and city managers, as mayors' knowledge and skills catch up to their professionally trained counterparts.

Though not representing a large percentage of the variability in the dependent variable, competition for annexable land (H_4) is significantly related to frequency of municipal annexation (p=.035). Results indicate that for every one additional incorporated area in the city's home county, there is a slight decrease of less than one annexation performed by that city. Thus, the expectation of greater frequency of annexation for cities experiencing less competition is supported.

State laws governing municipal boundary expansion are expected to increase frequency of annexation when the statute is categorized as less restrictive, such as in the case of municipal determination statutes. The results indicated a significant relationship (p=.002) between the frequency of annexation and municipal determination statutes (H_5). However, the direction of that effect was the opposite of this study's expectation. Findings suggest municipal determination statutes actually have a negative effect on frequency of annexation. An average of fourteen fewer annexations occurred per city operating under municipal determination statutes compared to other laws considered less restrictive. Surprisingly, this opposite effect was found in several previous studies concerned with legal constraints on annexation (Carr & Feiock 2001, Facer 2006). Quite possibly, restrictive rules encourage the use of smaller scale annexations since they are less likely to be opposed by referendum (Carr & Feiock 2001, 468).

This chapter illustrates the findings from the multiple regression analysis. The following chapter discusses these findings and takes the analysis one step further. An alternate measure of

annexation activity is presented along with the results from its analysis. Comparisons are drawn between the results of the two tests.

Chapter 5. Conclusions

This research attempted to explain factors that contribute to the frequency of municipal annexation among medium-sized southern U.S. cities. The first chapter introduced the research subject and discussed growth patterns that have driven many recent annexation actions. Chapter 2 reviews the scholarly literature concerning municipal annexation and develops the conceptual framework for the study.

H_1:   As compared to the mayor-council form, the council-manager form of government tends to engage more frequently in municipal annexation.

H_2:   Newer cities (more recently surpassing a population of 25,000) tend to engage more frequently in municipal annexation.

H_3:   Greater demographic difference between the central city and surrounding area tends to decrease frequency of annexation.

H_4:   Greater competition for annexable land tends to decrease the frequency of annexation.

H_5:   Municipal determination statutes influence the frequency of annexation.

In chapter 3, the conceptual framework is operationalized within a discussion of the research methodology. Chapter 4 presents the results of the multiple regression analysis used to test the effect of the independent variables on frequency of municipal annexation. This chapter concludes the research with a comparison of results of the analysis conducted and an alternate analysis using a different measure of annexation activity. Following this comparison is a brief discussion of the strengths and weaknesses of this study and suggestions for future research on municipal annexation. Table 5.1 displays whether each hypothesis was supported or rejected in the analysis.

Table 5.1
Hypotheses Tests Summary

Dependent Variable	+/-	Support/Reject
Frequency of Municipal Annexation		
Independent Variables		
Form of Government • City manager form	+	Reject
Age of Municipality • Cities more recently surpassing 25,000 population	+	Reject
Demographic Disparities • High racial disparity between center city and county	-	Reject
Competition • High level of competition between cities	-	Support
Statutory Authority • MD state	+/-	Support

   * MD= municipal determination, JD= judicial determination, PD=popular determination, LD=legislative determination, QL= quasi-legislative determination

Alternate Measure of Annexation Activity

     Past research on the frequency of municipal annexation has used different measures for

the dependent variable. This study utilized data on the number of annexations performed during

the 1990s, as this is a true measure of frequency. The following section analyzes another

dimension of annexation activity by altering the dependent variable to reflect the percentage of

total land area added through annexation during the 1990s. A comparison of the results from the

two analyses is conducted along with a discussion of the findings. Table 5.2 displays the

correlation matrix for the alternate dependent variable.

Table 5.2
Percentage of Total Land Area Annexed: Correlation Matrix

	% Land Annexed	Form	Age	Dem. Disp.	Competition	Stat. Auth.
%Land Annexed	1	-.108	-.106	.041	-.107	.174*
Form		1	-.036	.101	.223**	.246**
Age			1	.310**	-.188*	-.075
Dem. Disp.				1	-.166*	.007
Competition					1	-.008
Stat. Auth.						1

* significant at $\alpha = .05$
** significant at $\alpha = .01$

Measuring annexation activity by the percentage of total land area acquired through

annexation in the 1990s gives a sense of the size and scope of these actions, whereas, adding up

the total number of annexations per city can be misleading. Some cities perform many small

annexations while others opt for large-scale acquisitions on a less frequent basis. Adjusting the

dependent variable broadens the results by giving a different perspective on which types of cities

annex. In particular, it illustrates the cities' habits regarding annexation—whether they perform

these actions often or seldom, and whether the actions are large or small in scale. When taken

together, the number of annexations and percentage of total land area annexed provide a

comprehensive view of boundary expansion trends among cities.

Two of the five variables in the second analysis remained insignificant, indicating that the

age of municipality and demographic disparities between city and county have little bearing on

the frequency of annexation or size of annexations. Table 5.3 provides results from the multiple

regression analysis conducted using the alternate dependent variable, percentage of total land

area annexed during the 1990s.

Table 5.3
Percentage of Total Land Area Annexed: Multiple Regression Results

Independent Variable	Coefficient	Significance
Form of government	-4.058	.049*
Age of municipality	-.782	.082
Demographic disparity	.065	.232
Competition	-.097	.227
Statutory authority	4.684	.008*
Constant	9.202	.000*
Adjusted R^2	.063	
F statistic	3.072	.011*

- $N = 160$

* significant at $\alpha = .05$

Comparative Findings

Several interesting differences were evident between the results of the two measures of

annexation activity. Overall, the percentage of total land area annexed decreases the explanatory

power of the predictors. The adjusted R^2 value indicates merely 6.3% of the variance in

annexation activity is explained by the five independent variables. Though very slight, the form

of government (H_1) is significant at $\alpha = .05$ (.049); however, the direction of that effect is the

opposite of the study's expectation. Results indicate on average that the percentage of total land

area annexed decreases by slightly more than 4% under the council-manager form of

government. A possible explanation for this trend is that city managers may be discovering or using alternatives to annexation, such as smart growth and regional planning principles. City managers' expertise and professional training may be telling them that annexation is not the answer to their growing problem.

Competition (H_4) is no longer significant as a predictor of annexation activity when measured by land area. When competition increases, there is a minor decrease in the percentage of total land area annexed (-.097%). This study expected a greater decrease in land annexed when competition from other cities is high.   Nevertheless, competition affects frequency of annexation more than the size and scope of annexations. Further analysis of competition may reveal a reason for this trend.

The most compelling difference in results between the two measures of annexation activity is concerned with the type of laws governing annexation in the states (H_5). While frequency of annexation decreased by more than 14 incidences (-14.219) under municipal determination statutes, the percentage of total land area annexed increases by nearly 5% (4.68%). Laws seen as less restrictive on annexation authority seem to only inhibit cities from annexing many small parcels of land. Meanwhile, municipal determination laws are related to large-scale, one-time annexations. These results suggest that cities operating under laws seen as institutional constraints annex many small areas of land that may not attract the attention of concerned parties. On the other hand, when cities have less red tape to cut through, they tend to perform larger annexations because there is less legal opposition.

Much of the past research on annexation activity in the United States conveys mixed results. The use of two different measures of annexation activity shows that there are a variety of ways to confront the question, and the answers are often very different.

Most Actively Annexing Cities

The data on the most actively annexing cities reflect, more or less, the same trends seen in the regression analysis. The form of government, age of municipality, and demographic disparities between city and county do not seem to be related to frequency of annexation. On the other hand, competition and statutory authority do appear to have an effect on annexation activity. The majority of the top twenty-five cities operated under popular determination statutes. As is evident with statutory authority's effect on annexation rates, several states represented a disproportionately large number of the cities in the top twenty-five.

Of the eleven Georgia cities in the study, nearly half ($n = 5$) were in the top twenty-five. Georgia cities represented less than one-tenth of the sample population, however, they made up one-fifth of the top twenty-five cities. Similarly, six of the ten South Carolina cities in the study can be found on the top twenty-five list. Table 5.4 displays the top twenty-five cities with values for each variable.

Table 5.4
Top 25 Cities—Most Annexations

City, State	# Annexations (Dep. Var.)	% Land Annexed (Alt. Dep.Var.)	Form (H₁)	Age (H₂)	Dem. Disp. (H₃)	Competition (H₄)	Legal (H₅)
Fort Pierce, FL	188	1.16	CM	1	31.2	3	PD
Apopka, FL	177	16.92	MC	0	-1.4	13	PD
Frisco, TX	157	30.00	CM	0	-4.1	29.5	MD
Sumter, SC	112	4.02	CM	1	0.4	3	PD
Pinellas Park, FL	99	2.03	CM	2	-3.5	24	PD
Phenix City, AL	98	6.59	CM	4	12.1	5	LD
Madison, AL	96	7.97	MC	0	-1.8	6	LD
Warner Robins, GA	93	11.36	MC	3	-0.1	2.5	PD
Mount Pleasant, SC	77	17.35	MC	1	-25.7	15	PD
Rock Hill, SC	64	8.58	CM	2	10.7	8	PD
Panama City, FL	64	16.98	CM	4	19.1	9	PD
Gainesville, GA	63	7.16	CM	0	24.8	7	PD
Florence, SC	62	9.66	CM	3	4.7	9	PD
Auburn, AL	60	4.81	CM	2	-3.9	8	LD
Bristol, TN	57	17.59	CM	0	1.4	4	MD
Aiken, SC	55	3.09	CM	0	5.1	10	PD
Slidell, LA	53	4.32	MC	2	2.4	7	PD
Morristown, TN	51	1.58	CM	1	12.4	7	MD
Smyrna, GA	51	11.29	MC	0	11.3	3	PD
Summerville, SC	48	9.55	MC	6	20.5	2	PD
Rome, GA	48	3.81	CM	0	-9.2	10.3	PD
Texarkana, AR	45	34.26	CM	0	8.5	3	PD
Dalton, GA	44	6.77	MC	1	24.1	7	PD
Sanford, FL	44	3.04	CM	0	27.1	4	PD
Winter Haven, FL	41	12.49	CM	1	11.3	18	PD
Population Average	17.6	6.22	-	2	4.6	14	-

Differences Between States

One of the expectations of this study is that state laws affect the frequency of annexation.

The states were categorized as either having a municipal determination statute where the city is

given the latitude to annex with relative ease, or not. What are some of the differences in

annexation activity between the states? In particular, how do the various types of statutes affect

the frequency of annexation? Table 5.5 describes annexation activity among the southern states.

Table 5.5
Annexation Activity Among the States

State	Number of Cities	Statute Type	Mean Frequency	Median Frequency	Mean Land Area %
Alabama	8	LD	34	9	2.9
Arkansas	7	PD	15	10	13.9
Florida	37	PD	23	6	3.76
Georgia	11	PD	34	35	4.82
Kentucky	7	MD	6	6	4.77
Louisiana	3	PD	29	30	4.72
Mississippi	8	JD	1	0	0.77
North Carolina	9	MD	2	0	3.97
South Carolina	10	PD	47	52	5.75
Tennessee	13	MD	18	16	4.84
Texas	45	MD	8	3	10.56
Virginia	2	LD	0.5	--	1.51

* MD= municipal determination, JD= judicial determination, PD=popular determination,
LD=legislative determination, QL= quasi-legislative determination

Popular determination statutes were the least restrictive upon the frequency of

annexation. Meanwhile, the difference annexed among the states by city between land area did

not vary greatly, further suggesting that so-called restrictive statutes hinder large annexations but

not frequent small ones. Popular determination statutes involve a citizen vote on the proposed

annexation. Descriptive statistics suggest that popular determination cities annex small tracts of

land frequently, possibly because there is less public opposition to these small-scale annexation

decisions.

South Carolina cities annexed the most frequently (mean=47), but only added a moderate

percentage of land area via annexation (5.75%). Conversely, Arkansas cities annexed the greatest

percentage of their land area during the 1990s (13.9%) but only averaged fifteen annexations per

city. Both of these states operate under popular determination statutes, so there must be more factors involved.

Texas and Florida cities represented slightly more than half of the sample population and their annexation habits are distinctly different. While Texas cities annexed a large percentage of land (mean=10.56%) less frequently (mean=8 annexations), Florida cities frequently (mean=23 annexations) annexed a small percentage of their total land area (mean=3.76%). Quite possibly, geographic differences could contribute since there is less developable land in Florida. Swampland and a smaller overall land area lead to less available annexable land in Florida than in Texas, where land is plentiful and more conducive to residential and commercial development.

Strengths and Weaknesses

A low number for the coefficient of determination (R^2) demonstrates the myriad possible factors influencing the frequency of municipal annexation. Failing to take into account these possibilities is a weakness of this study. The hypotheses did not fully address the sheer scope of the research question. Extreme outliers in the dependent variable may have an impact on the results, as several cities logged more than 100 annexations during the 1990s (mean annexation score=17.6).

Suggestions for Future Research

Future research on factors contributing to the frequency of municipal annexation should expand the selected sample and the range of predicting variables. Follow-up studies should utilize a sample of cities representing western U.S. states in addition to southern states. As well,

smaller cities (greater than 5,000) from these states should be included to gain a more broad perspective.

Most important this study would have benefitted from the presence of numerous other independent variables to account for the multitude of possible influences on the frequency of annexation. In particular, the rate of county growth prior to 1990 may have had an impact since rapidly growing areas tend to be outside of cities. The expectation would be that cities in rapidly growing counties will annex more frequently to capture the sprawling tax base.

The dependent variable chosen in future studies should take into account the land area annexed as well as the frequency of annexation. Annexations vary so greatly that using multiple measures of annexation activity is necessary.

Finally, state laws should be analyzed on a more detailed basis. Taking into account the nuances in each state's laws would be a precursor to ranking the statutes on restrictiveness. For instance, does one state's law limit the square mileage that can be annexed? If so, this state's statute would be more restrictive than a law in another state that does not limit the size of an annexation.

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