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COMMUNITY CHARACTERISTICS
ASSOCIATED WITH
LOCAL INTERGOVERNMENTAL COOPERATION

by

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B.Arch., Indian Institute of Technology, Roorkee, 2002
M.Sc. Urban Planning, Tribhuvan University, Nepal, 2006

A Dissertation
Submitted to the Faculty of the
College of Arts and Sciences of the University of Louisville
in Partial Fulfillment of the Requirements
for the Degree of

Doctor of Philosophy
in
Urban and Public Affairs

Department of Urban and Public Affairs
University of Louisville
Louisville, Kentucky

May 2015

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A Dissertation Approved on

April 8, 2015

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To Pratiksha, Ishaan, Ammi, Abbu, and Nanu

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ABSTRACT

COMMUNITY CHARACTERISTICS ASSOCIATED WITH LOCAL INTERGOVERNMENTAL COOPERATION

Sarin Adhikari

May 8, 2015

Metropolitan fragmentation is considered the root cause of inequality among local governments. Self-governing localities have the power to exercise zoning and land-use laws to lock up their resources, which gives them a competitive edge against their neighbors. Localities are unique in terms of their economic capacity, fiscal strength, geographic location, racial makeup of their residents and their income status. Such differences reflect into variation in preference for urban infrastructure and the capacity of local governments to provide preferred services at the lowest possible taxes and fees. Some scholars have suggested consolidating localities into large regional governments to overcome such inequalities. However, studies focused on consolidated regional governments show that they have not been successful in fulfilling their promises. This manuscript is predicated on the argument that production of urban services need not be competitive as its provision, and localities can reap benefits of scale-economy and standardization of services through voluntary mutual cooperation and policy coordination without having to abdicate their rights of self-governance. The purpose of this manuscript

is to identify various economic, political, social, and geographic characteristics of localities that influence the extent of cooperation among them. This manuscript intends to do that by using aggregate data and quantitative methods designed to overcome weaknesses faced by previous studies.

The data used for this analysis comes from 1,164 general purpose local governments—cities, municipalities, counties, and townships—within 51 largest metropolitan statistical areas in the United States. It uses robust linear regression to identify causal relationship between variables representing local economic, social, political, and geographic characteristics and the extent of interlocal cooperation among localities. Metropolitan fragmentation, growth in the developmental sector, fiscal stress, poverty, and the senior population are found to positively influence local governments' decision to cooperate with their neighbors. Conversely, property value, growth in manufacturing sector, higher percentage of whites and the rich are found to negatively influence cooperation decisions. Similarly, localities in close proximity are found to engage less in interlocal cooperation, whereas African-American population is found to have no substantial influence on cooperation decisions. Besides, cities and municipalities are found to engage more in interlocal cooperation than counties, and localities in the South are found to be less inclined to pursue interlocal cooperation than the rest of the country.

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CHAPTER I

INTRODUCTION

Background

The political geography of metropolitan America is highly fragmented. According to the 2012 Census of Governments, there are altogether 90,056 local governments in the United States. Forty three percent (38,910) of those are general-purpose governments, and 56 percent (51,146) are special-purpose governments. The population¹ of the United States as estimated by the American Community Survey for the year 2012 was 309,138,711, which suggests that one local government serves approximately 3000 people in this country. Public-choice theory adequately explains why so many local governments exist. The Tiebout model of population distribution suggests that proliferation of local governments within metropolitan geography results from peoples' preference for specific bundles of urban services and infrastructure. Tiebout claims that local jurisdictions seek to attract wealthy residents by providing them lucrative bundles of urban services and taxes (Tiebout, 1956). As much as numerous small autonomous jurisdictions are praised for their responsiveness to their citizens' preferences, efficiency in service provision, self-determination, fiscal accountability, and political representation, they are equally despised for inequality, spillover costs, and unresponsive attitudes towards policy externalities (ACIR, 1985, 1987; Downs, 1994; Miller, Miranda, Roque, & Wilf, 1995; Nice, 1987; Oakerson, 1999; Parks & Oakerson, 1989, 1993). Various

urban problems — racial imbalance, economic inequality, protection of privileges, exploitation of central cities by their suburbs, inner-city isolation, lack of affordable housing, accessibility to urban services, traffic congestion, lack of rational land use, commitment to environmental values, air and water pollution, and excessive loss of open space — have been associated with metropolitan fragmentation resulting from autonomy and self-governance (Downs, 1994; Ross & Levine, 1996).

For over thirty years urban scholars have focused their research on various models of metropolitan governance with a unitary objective of finding solutions to the problems arising from fragmentation and segregation (Dodge, 1996; Orfield, 1997a, 1997b; Rusk, 1993, 1999; Savitch & Vogel, 2000). There is a general consensus that a regional solution is needed to solve those problems, but scholars are divided on which model of regional governance is the most appropriate. The divide boils down to the dichotomy between regional *government* and regional *governance*. The proponents of regional government envision an overarching area-wide consolidated metropolitan government as an ideal model. They also suggest an alternative model of multi-tiered nested government where complete consolidation is difficult to achieve (Norris, 2001; Rusk, 1993, 1999). Metropolitan governance, on the other hand, focuses on functionally overlapping, cross-cutting, and flexible cooperative networks between localities, thereby forming a regional ecosystem without the rigidity of an overarching administrative structure (Feiock, 2009; Feiock, Tao, & Johnson, 2004; Oakerson, 2004; Parks & Oakerson, 1989, 2000; Savitch & Vogel, 2000).

Structural reform is less popular among urban voters (Carr & Feiock, 1999; Walker, 1987). Reforms such as consolidation of city and county governments have not

been successful in keeping all of the promises made for improved efficiency, economic growth, fiscal improvement, and equity (Blomquist & Parks, 1995; Carr & Feiock, 1999; Feiock, Carr, & Johnson, 2006; Kelly & Adhikari, 2013; Rosentraub, 2000; H.V. Savitch, Vogel, & Ye, 2010). Regional governmental structures that use command-and-control mechanisms are also considered ineffective (Polanyi, 1998) because they accrue higher transaction costs (Oakerson, 2004).

Governance without a government, on the other hand, has been attributed as the easiest method for regional collective action; and governance through a network of voluntary interlocal cooperation is considered to be the easiest of them all (Savitch & Vogel, 2000; Walker, 1987). Parks and Oakerson believe that metropolitan governance can occur without metropolitan government even in highly fragmented metropolitan areas (Oakerson, 1999; Parks & Oakerson, 2000). Even though jurisdictions compete for the *provision* of urban services and infrastructures, the *production* of those services need not be an outcome of a competitive process (Howell-Moroney, 2008; V. Ostrom, Tiebout, & Warren, 1961). Cooperation and competition among jurisdictions are not mutually exclusive. Jurisdictions can as easily decide to cooperate or collaborate with one another on production and simultaneously compete on provision of services (V. Ostrom et al., 1961). While provision decisions are political in nature, production decisions are purely economic.

Fragmented metropolitan areas are envisioned to be composed of a number of provision and production units competing as well as cooperating with one another thereby forming a complex local public economy (Oakerson, 1999). Besides, cooperative networks among competing jurisdictions have been seen not only in producing urban

services, but also in planning and developing major infrastructure improvements such as ports, airports, business parks, and convention centers (Feiock et al., 2004; Wallis, 1994c).

What Is Interlocal Cooperation?

Interlocal cooperation can be defined as effort for collective action between two or more local government entities for service delivery, economic development, land-use planning, environment protection, and mutually beneficial policies. Depending on their nature, common local policies can be broadly classified as those involving mutual action and/or coordination in production and/or provision of urban services and infrastructure (*constructive policies*) and mutual policies that are focused on compensating for any negative externalities impacting other jurisdictions (*restorative policies*). For localities to engage in cooperation with one another, the transaction cost of participating in such an endeavor needs to be sufficiently low (North, 1990; Williamson, 1979, 1981), and localities need to be willing to reciprocate on the cooperative actions of their neighbors (Axelrod & Bennett, 1993; Axelrod, 1984; E. Ostrom, 1998). The easiest approaches to regional service delivery by Walker (1987) include informal cooperation, interlocal service contracts, and joint power agreements. Similarly, Oakerson (1999) has suggested in-house production, coordinated production, joint production, intergovernmental contracting, private contracting, franchising, and vouchering as different ways to link provision to production. Cooperation forged through a binding contract is considered *formal*, and the one not documented formally is *informal* – also called the *handshake* deal (Post, 2002). Informal agreements are perpetuated on the grounds of reciprocity of action

and mutual trust between participants (Post, 2002; Walker, 1987). *Interlocal service contracts* are voluntary formal agreements popular among local governments in metropolitan regions (Walker, 1987). *Joint power agreements* are formal arrangements between two or more local governments for joint planning, financing, and delivery of services to citizens of the participating jurisdictions (Walker, 1987).

Formal contracts are more stable and less risky to the participants. However, short-term, ad hoc relationships provide the flexibility for localities to quickly retreat from a less beneficial relationship and enter into a different one that provides better outcomes. Additionally, Post (2002) classifies collective action as one that involves exchange of funds and one that involves bartering services with no financial transaction. A local government might exchange a service in return for another service of equal value rendered by a neighboring locality and, hence, avoid exchanging funds. In another case, a group of localities might cooperatively decide to set uniform local tax rates across the region that also do not necessarily require monetary exchange. Relationships that include exchange of funds are more easily quantifiable than those that do not.

Need for Interlocal Cooperation

The primary reason for interlocal cooperation is that localities have nothing to gain from unyielding competition. Conventional theory suggest that local jurisdictions must be in competition with each other to gain elite interests and thereby enhance fiscal conditions at the expense of the others (Tiebout, 1956). The competition is so severe that cities must constantly seek investment in developmental infrastructure and explore various tactics to reduce taxes to look attractive to potential residents and businesses.

Cities are forced to pursue developmental initiatives regardless of whether these policies are the most beneficial (Peterson, 1981).

However, local competition is a zero-sum game in which one jurisdiction loses while the other wins. To keep winning the competitive game, localities risk large investments on potentially attractive projects and make unprofitable deals with big businesses in anticipation of future benefits. Extravagant competitive spending and astronomical debts accrued in the process put localities on a downward spiral often referred to as a race-to-the-bottom (Savitch, Kantor, & Vicari, 2002).

Furthermore, studies have shown that localities in city centers and suburbs are economically linked and share a common economic fate. Suburbs cannot thrive if their central cities are withering (Ledebur & Barnes, 1992; Savitch, Collins, Sanders, & Markham, 1993; Voith, 1998). Localities sharing a regional geography are economically connected to a common regional market that thrives when all units in the region have healthy economies (Barnes & Ledebur, 1998).

In the current era of globalization, metropolitan regions from around the world compete for economic resources. Since localities are the building-blocks of metropolitan regions, globalization puts them in direct competition with their peers from around the world for specialized services and labor-intensive jobs (Barnes & Ledebur, 1998; Sassen, 1991; Short, 2004). Fragmented economic resources and competitive attitudes among localities limit the ability of the metropolitan regions to compete with their global counterparts. Other social and political problems at the local level also affect global competitiveness of city-regions. Localities are better off collaborating with one another to reap collective benefits gained by attracting global resources (Dodge, 1990, 1996).

Cost saving through economies of scale has been cited as strong rationale for cities to cooperate (J. Ferris & Graddy, 1986; Morgan & Hirlinger, 1991; Sonenblum, Kirlin, & Ries, 1977; Stein, 1990). In a study conducted by the Advisory Commission on Intergovernmental Relations (ACIR), more than half of the respondent cities mentioned economies of scale as the primary reason for entering into a regional coalition (ACIR, 1985). Whereas localities can decide to jointly produce urban services to achieve scale economy, smaller localities unable to produce capital-intensive services can also ensure service continuity by cooperating with a larger neighboring locality (Post, 2002). Use of cooperative methods for continued access to desired urban services has been documented by Ugboro et al. as well (Ugboro, Obeng, & Talley, 2001).

Cities can internalize both positive and negative cross-border spillovers by enacting common policies (Feiock, 2007). They can also get compensated for lost revenues resulting from cross-border inequalities by a cooperative system of revenue sharing among neighboring jurisdictions (Pack, 1998; Rothenberg, 1992). Improvement of business climate and the ability to capture wandering businesses has been suggested as strong motivation for interlocal cooperation (Nunn & Rosentraub, 1997).

Interlocal cooperation is also considered a viable option for localities to relieve their fiscal stress and enhance their fiscal capacity. Local governments can enhance their fiscal capacity by dumping costly in-house production in favor of a joint production structure (ACIR, 1985). Scale economy and access to relatively cheap services can help move low-service, high-tax communities toward a more competitively priced bundle of services (Miller et al., 1995). According to Miller (1995), communities with high tax effort and low tax yield are considered to be in the state of fiscal stress. Joint planning,

changes in incompatible land uses, uniform tax rates (or shared revenue), and standardized urban services create a leveled playing field among neighboring localities thereby reducing disparity among them. Residents and businesses, then, have fewer incentives to relocate thereby improving tax yield of previously stressed localities. Standardizing services and minimizing spatial disparity can help recovery in hollowing city centers thus improving overall regional competitiveness (Liebman, Herman, Williams, & Dye, 1963).

Unanswered Questions about Interlocal Cooperation

Fragmented governments in metropolitan regions are considered the leading cause of socioeconomic variations between localities. Fragmentation perpetuates the status quo which is structurally supported homogenous segregation. It is natural to conclude that what has caused metropolitan areas to fragment is also what prevents them from engaging in a collective action. Urbanists strongly agree that citizens have unequal needs and preferences and they prefer to segregate in fragmented communities (ACIR, 1987; Nice, 1987), that fragmentation causes competition between localities (Post, 2004a; Tiebout, 1956), and that fragmented localities find it difficult to cooperate. However, studies have also found that competition and cooperation can coexist (Feiock, 2004; E. Ostrom, 1990, 2000) and that localities cooperate with one another even when competition is the accepted norm (Goetz & Kayser, 1993). Some studies claim that fragmentation does not negatively impact interlocal cooperation (Feiock et al., 2004) and even take the argument a step further suggesting that fragmentation increases probability of cooperation by simply increasing the number of potential collaborators (Campbell &

Glynn, 1990). The very nature of fragmentation by preferential sorting suggests that localities that share a common geography do not necessarily share characteristic similarities. It is important to understand how local characteristics affect interlocal cooperation and to identify why some localities with certain characteristics cooperate more than others.

Earlier literature on interlocal relationships suggest that localities are the building blocks of the local public economy that interact in a regional common market (Barnes & Ledebur, 1998; Oakerson, 1999; Parks & Oakerson, 1989), but the literature fails to discuss how characteristic variations of these localities affect their ability to contribute in the regional marketplace. The transaction-cost theory builds a purely economic argument based on relative cost of engaging into cooperation (Williamson, 1979), but it does not elaborate on what constitutes the variation in transaction costs. Extant literature suggests that transaction costs can be minimized by smaller group sizes (number of localities engaged in cooperation), smaller jurisdictions, closer proximity, and contiguity (Ferris & Graddy, 1991; Liebman et al., 1963; Olson, 1971; Post, 2002; Williamson, 1979), but it does not elaborate on the role of socio-economic and political characteristics of localities on their decision to engage in collective action.

Scholars have suggested that racial variations (Feiock et al., 2004; Ferris & Graddy, 1986; Post, 2004a) and fiscal condition of localities (Downs, 1994; Ferris & Graddy, 1986; K. A. Foster, 1997; Haughwout, 1999; Heeg, Klagge, & OssenbrÜGge, 2003; Sonenblum et al., 1977) possibly influence interlocal cooperation. Outcomes from those studies and their limitations will be discussed in the next chapter.

Purpose and Importance of This Research

This manuscript is predicated on the assumption that ad hoc cooperation between local governments is the path to metropolitan governance, and the success of such cooperative governance depends on the ease of forming cooperative networks. Every jurisdiction has a unique set of socio-economic characteristics that influences its cooperative relationships with its neighbors. The body of literature on interlocal relations and its role in building cooperative regional governance is very strong. Studies shed light on the influence of the characteristic uniqueness of localities on interlocal cooperation, but most of them are focused on specific metropolitan areas. Some of them are very old, and others fail to provide conclusive findings. The literature lacks large aggregate analysis on interlocal relations based on recent data and robust quantitative methods producing conclusive results that can be trustfully generalized. This manuscript is an attempt to fill that void. This research attempts to answer the question, “Why do some localities cooperate more than others?”

Additionally, this research explores how variations among fragmented localities affect their desire and capacity to cooperate with their neighbors. It also addresses why some localities cooperate more than others. This research identifies stereotypes of localities for further research and academic discussions. The literature on regionalism has established that regional governance does not have a one-size-fits-all model. The outcome of this study will help policy makers to adopt appropriate models of regional collective action that are suitable and acceptable to specific localities. With proper understanding of influence of local characteristics on metropolitan collective action,

customized governance models will have a higher probability of success compared to existing coercive methods.

This document is divided into six chapters. A brief explanation of the problem and its background is provided in the introduction. Chapter two reviews the literature and theoretical constructs regarding the subject matter. Chapter three explains the research methods and develops hypotheses to be tested. Chapter four provides a summary of the research findings. Chapter five provides discussion of the findings and chapter six lays out research conclusions and identifies avenues for further research.

CHAPTER II

LITERATURE REVIEW

Scholars contend that regional governance in metropolitan areas is necessary to reap the benefits of economy of scale in the provision of urban services. Regional governance is more equitable due to standardization of area-wide policies and is able to internalize policy spillovers—both positive and negative—across jurisdictional boundaries. However, scholars have differences of opinion regarding appropriate paths to regionalism. This chapter reviews arguments made in favor of polycentric, as well as monocentric, organization of localities and governing metropolitan areas through restructuring of metropolitan government versus non-structural metropolitan governance. In conclusion, the chapter makes a logical move toward the need for metropolitan governance through interlocal cooperation and identifies gaps in the literature in this arena.

Divided Schools of Thought about Regional Collective Action

Throughout modern history, cities have adopted various regional measures to solve local problems. According to Wallis, there have been three major waves of regionalism (Wallis, 1994a, 1994b, 1994c). The first wave sought solutions at the local level, generally by restructuring regional government through annexations and complete

or partial consolidations. Most of the consolidation of large metropolises such as New Orleans (1805), Boston (1821), Philadelphia (1854), San Francisco (1856), and New York (1874-1898), took place in the nineteenth century, all of them by legislative action (Wallis, 1994b). During the twentieth century, the main idea for local governmental restructuring was based on a simple assumption that too many local governments reduced the effectiveness of metropolitan governance, which needs to be replaced by consolidated regional governments. The focus of those consolidations was to strengthen the regional government by broadening the tax base to the greatest possible extent and to prevent revenue loss caused by extra jurisdictional migration.

Proponents of the monocentric model of regional governance believe that urban regions with a strong central government that are able to blanket the entire region with standardized policies are better able to address urban problems compared to their fragmented counterparts (Aron, 1969; Peirce, Johnson, & Hall, 1993; Rusk, 1993, 1999, 2003; Wood, 1961). Rusk uses the term “elastic” cities to define jurisdictions that are able to expand their existing boundaries to encompass outlying communities so as to bring the entire region under one policy umbrella. According to Wallis (1994), between 1950 and 1970 Atlanta quadrupled in size, Dallas and Fort Worth grew to more than double their size, San Jose jumped from 17 to 140 square miles, and Phoenix expanded from 17 to almost 250 square miles. Though most of these territorial expansions were a result of major cities annexing unincorporated areas, a number of instances where smaller independent cities consolidated with a neighboring major city have also been reported. With the exceptions of Denver city – Denver County, Honolulu city – Honolulu County, and the city and county of Broomfield (Colorado), all consolidations that took place in

the twentieth century happened by referendum. Notably, between 1921 and 2010, there were a total of 164 attempts of city-county consolidations of which voters approved only thirty four (Murphy, 2012). Even with a success rate of just about 20 percent, proponents of consolidation still believe it is the most appropriate model of regional governance (Carver, 1973; Filer & Kenny, 1980; Foster, Gonzalez, & Chappell Jr., 1981; Gorton, 1978; B. W. Hawkins, Ward, & Becker, 1991; Leland & Thurmaier, 2000; S. M. Leland & Thurmaier, 2010; Lyons & Lowery, 1989; Peirce et al., 1993; Rosentraub, 2000; Rusk, 1993, 1999). They tend to focus more on benefits of coordinated and equitable services and enhanced regional economic competitiveness.

As with the case presented by Wallis (1994b), most of the late eighteenth-century and early and mid-nineteenth-century approaches to regionalism was more about centralization as a response to fragmentation. An ideal situation according to consolidationists would be a unified regional government with area-wide powers. However, supporters of monocentric models also agree that such an ideal situation is far from reality. This explains their continued support for incomplete consolidations, partial mergers, and other forms of multitier restructuring (Norris, 2001; Orfield, 1997a). Norris (2001) paints a gloomier picture of American metropolitics believing that localities will continue to fragment and urban problems will continue to exacerbate in the foreseeable future without any possible resolution. Norris (2001) argues that state and federal intervention may be necessary to create a multi-tiered formally structured government to deal with some issues.

Difficulty in achieving consolidated regional governments through referendums is probably the reason behind many reform scholars advocating for state and federal

intervention on local issues. Wallis (1994b) calls it the second wave of regionalism. Massive influx of federal money for infrastructure development—primarily transportation—and mandatory requirements for regional planning and coordinated area-wide development brought federally brokered institutions like Council of Governments (COGs) and Metropolitan Planning Organizations (MPOs) into the regional limelight. Despite having an undertone of regional-type institution, they had a fragmented core-structure made up of local representatives coerced for forced collaboration. Competition for federal grants soon rekindled rivalry among participating localities.

By the 1990s while some reform scholars had given up on metropolitan regionalism because of numerous failed consolidation attempts and increasing fragmentation due to local autonomy (Norris, 2001), others were busy evaluating outcomes of various reform experiments that took place in the last century. Metropolitan consolidation and multi tiered reform are the flagship models of the old regionalism. Over the period of the last four decades, scholars have studied these models to examine their effectiveness. Most of them report little or no achievement of the promised outcomes (Benton & Gamble, 1984; Blomquist & Parks, 1995; Brierly, 2004; Carr, Bae, & Lu, 2006; Carr & Feiock, 1999; Clarke, 2006; Feiock, 2004; Feiock & Carr, 1997; Hutcheson & Prather, 1979; Reese, 2004; Rogers & Lipsey, 1974; Savitch & Vogel, 2000, 2004; Seamon & Feiock, 1995; Selden & Campbell, 2000).

Feiock (2004) claims that city-county consolidations fail to produce the intended results due to the compromises made in order to pass the consolidation initiative. These compromises often stripped away the basic powers needed to address inequity. Similarly, Brierly (2004) claims that government centralization through consolidation simply

increases transaction costs both within and between local governments. This argument is further supported by Savitch and Vogel (2000). They concluded that the functional linkages between localities in the Louisville metropolitan region (before consolidation) created an environment of mutual trust that was necessary for collective action. They did not expect localities to be trusting and respectful of each other if any form of consolidation was forced on them.

Reformists generally claim improvement in fiscal health, better economic conditions, benefits due to economy of scale, standardization and efficiency in service provision, responsive governments, and improvement in quality of life as possible outcomes of local government reform. They provide a strong theoretical argument that consolidated governments should improve local conditions; but those hypotheses are rarely quantitatively supported (Gorton, 1978; Hawkins et al., 1991; Leland & Thurmaier, 2010; Rosentraub, 2000). Leland and Thurmaier (2000) contend that consolidation improves fiscal health and budgetary accountability based on their study of Kansas City and Wyandotte County, but the analytical underpinnings do not seem sufficient and strong. Kelly and Adhikari (2013), using a time-series information on Louisville and Jefferson County find marginal improvement in fiscal health as a result of consolidation.

Claims about benefits of consolidation in service provision through scale economy and better citizen responsiveness (Carver, 1973; Foster et al., 1981; Lyons & Lowery, 1989) are yet to be quantitatively supported. According to the study done by Hutcheson and Prather (1979), with the increase in size of the regional government comes an inflated bureaucracy that makes scale economies unlikely. In fact Carver's

claim about government–responsiveness using a citizen survey done just five years after the consolidation of Jacksonville city and Duval county might have been a little too early to provide a realistic picture.

Governmental reforms have been found to shake things up in the first few years of change. Reese (2004) argues that even though consolidation might stir up the regional economy in the beginning, it fails to create lasting and noticeable change to an average voter. A citizen survey carried out (after twelve years of consolidation) in a small town outside Nashville City-Davidson County and a comparable neighborhood within the urban services district showed considerably higher satisfaction with the local government in the small town than in the urban-service district (Rogers & Lipsey, 1974).

Another argument popular among reformists is the reduction of fragmentation, uniformity of taxes, and lowering of government expenditures as a result of consolidation. However, Benton and Gamble (1984) provide quantitative evidence that there was no reduction in property taxes or expenditures even after fifteen years of the consolidation of city of Jacksonville and Duval County. On a similar note, Blomquist and Parks (1995) report little evidence of reduction in taxing units as well as in complexity of governmental structure even after twenty four years of Indianapolis City-Marion County consolidation.

There are similar failure stories on the economic-development front as well. Seamon and Feiock (1995), Feiock and Carr (1997; 1999) find no effect of the Jacksonville-Duval consolidation on its economic development. Similarly, Carr et al. (2006) found no effect of consolidation on economic growth when they compared data

from consolidated Lexington City-Fayette County with that of Louisville City-Jefferson County before their consolidation in 2003.

Consolidationists also claim that the reform models are better able to achieve fiscal redistribution across urban regions. It is theorized that monocentric reform brings localities under a common policy umbrella thus allowing for easy revenue transfers and expenditures on redistributive programs. Consolidation is also suggested to be a primary vehicle for transferring wealth from suburbs to the city (Filer & Kenny, 1980; Rusk, 2003). However, Blomquist and Parks (1995) have found little evidence of financial redistribution through more than twenty years after the birth of Indianapolis Unigov. Forced redistribution is probably a weakness rather than strength of consolidation. Scholars have reported further migration of residents into outer suburbs and leapfrogging exurbs as a result of such policies (Barnes & Ledebur, 1998; Downs, 1994). The regional government cannot exercise its power of “elasticity” quick enough to engulf new border towns. Some metropolitan regions have waited decades to get public mandate for consolidated governments. This simply suggests that consolidation attempts are not popular among voters and they spur new extra jurisdictional development at the perimeter, thus aggravating the problem it was designed to resolve.

Besides its failure to keep its promises, scholars have reported local governmental reform to be strongly associated with reduced citizen participation in local decision making. Seamon and Feiock (1995) have reported reduced voter participation in local elections after the Jacksonville-Duval consolidation. On a similar note, Clarke (2006) also reported dilution of minority political power resulting from Louisville-Jefferson County consolidation.

Regionalism through Cooperation and Coordination

The examples presented in the previous section are sufficient to make a case that regionalism through local governmental reform is an expensive and a laborious exercise in vain. It is not very difficult to see why scholarly attention shifted from *structure* to *process*, from *governing* to *capacity building*, and from *government* to *governance* (Wallis, 1994c). Tiebout had already provided a strong explanation of regional fragmentation through the application of micro-economic theory on urban localities (Tiebout, 1956). This led to an understanding that fragmentation and segregation are the result of self-sorting populations based on their likes and wants. Reformists' claim about achieving economy of scale through governmental consolidation came under theoretical scrutiny when Ostrom et al. (1961) argued that scale economies for different urban services are obtained at different levels. Therefore, an area-wide consolidation might not always be the most efficient way of governing an urban region. With the distinction between *production* and *provision* units (ACIR, 1987), various urban services could be (theoretically) unbundled and different levels of scale economy could be realized. This distinction allowed urban governance to be viewed more as a self-organizing local public economy (Oakerson, 1999; Parks & Oakerson, 1989) than a random crazy-quilt bunch of fiercely competing local governments.

Parks and Oakerson suggest that regionalism is better achieved through cooperation and coordination among already existing local governments rather than creating area-wide structures. Wherever necessary, localities can choose to create functionally cross-cutting regional bodies with specific responsibilities. Encouraging cooperation on pressing urban issues and creating local networks between existing

governmental institutions have been suggested as the most appropriate and the easiest paths to regional governance (Feiock, 2009; Savitch & Vogel, 2000; Walker, 1987). Savitch and Vogel call this phenomenon *new-regionalism*.

The failure stories of old regionalism were probably the final nails in the coffin, which renewed scholarly interest in cooperative governance through voluntary participation of urban governments. Consolidated governments are getting internally fragmented as they embark upon creating new independent public authorities such as in the cases of Jacksonville and Indianapolis Unigov (Savitch & Vogel, 1996). Savitch and Vogel also claim that despite having area-wide powers, consolidated governments avoid introducing harsh policies to avoid public outcry. Hence, much is left for localities to decide for themselves, to which localities have responded by cooperating and coordinating in the least controversial ways (Savitch & Vogel, 1996).

Of the seventeen different variants of regional collective action listed by Walker (1987), methods that require governmental reform populate the *tough* end of the spectrum while regional approaches to urban-service delivery through informal cooperation, interlocal service contracts, and joint power agreements are considered to be the *easiest* ones. On a similar note, Savitch and Vogel (2000) introduce the *Linked Function* model and *Complex Networks* model as closest realization to *governance without government*.

Linked function is described as a form of functional consolidation through interlocal service agreements in which a city and its county can mutually choose to delegate specific functions such as economic development or waste disposal, to be governed in an area-wide basis. Governments can also add or remove more functions through mutual agreements to include revenue sharing or for other forms of redistribution

as applicable to them. This model allows for local governments to maintain their autonomy on certain policy issues while collaborating on others.

While the linked function model assumes regional fragmentation as something that needs to be addressed through seemingly partial consolidation, the complex networks model considers fragmentation to be the cause to increase potential for cooperative governance. According to Savitch and Vogel, a large number of independent local governments can voluntarily cooperate through multiple overlapping networks of interlocal agreements. This complex web of cooperation allows for numerous service arrangements of various types to choose from while maintaining citizen control over each one of them. This model calls for a self-organizing and organic form of governance. Also known as *complex arrays*, this model consists of provision units such as municipalities, townships, counties, and special districts together with public authorities, and private contractors forming a local public economy (ACIR, 1987).

However, skeptics of these models believe that regionalism through cooperative governance can never be successful because of one simple reason: independent localities might just stop cooperating thus removing the parameter that the entire model is based on (Norris, 2001). Norris also points to the practical difficulties faced by localities when their governing officials are replaced and they need to engage in negotiations again. Savitch and Vogel (2000) themselves agree that self-direction may lead to no direction and localities might revert back to maintaining the status quo.

Theories on cooperation, however, suggest that localities will cooperate as long as conditions for cooperation are met (Axelrod, 1984; Williamson, 1979); hence skepticism about continued cooperation or the future of cooperative networks is irrelevant.

Anticipating for the stability of interlocal networks undermine the randomness and organic character of interlocal cooperation as suggested by the complex networks model. As long as conditions for cooperation are met, localities will cooperate. However, if conditions are not favorable and collective action needs to be forced on them (presumably by a third party), it is equivalent to reverting to the *reform* model through formation of some form of institutionalized regional government.

Conditions for Interlocal Cooperation

Theories on interlocal relationships emphasize certain conditions that encourage and ensure interlocal cooperation. According to Olson (1971), Axelrod (1984), and later Coleman (1990), the first step toward cooperation is the realization that benefits from such endeavors exist. It is easier to realize collective benefits in urban services requiring large-scale investments such as solid-waste disposal and waste-water treatment, or asset-specific seasonal services such as snow removal and road maintenance; however, mutual benefits are not easily visible in issues related to land uses, parks and recreation, and tax policies. That is probably why skeptics of cooperative governance are concerned that interlocal cooperation is achieved easily in “systems maintenance” services but not in “lifestyle” services (Howell-Moroney, 2008; Norris, 2001; Williams, 1967). Norris (2001) even argues that the way localities avoid cooperating on pressing lifestyle issues resulting from fragmentation is the primary weakness of governance without government. Recent studies have shown that localities within an urban region are dependent on each other (Oakerson, 1999, 2004), and that the economies of central cities and suburbs are

interrelated. Suburbs cannot thrive if their corresponding central cities are withering (Savitch et al., 1993; Savitch & Vogel, 2004).

Reciprocity is another condition for successful cooperation. According to Axelrod (1984), individuals (and probably institutions too) tend to reciprocate the behavior of their opponents under conditions of uncertainty. It takes repeated interactions with the same partners to build trust between the parties. Since urban jurisdictions are geographically fixed, both the conditions for repeat interactions and fixed partners are satisfied. Hawkins and Feiock (n.d.) also substantiate the theory of reciprocity with their finding that prior agreements between localities influence future cooperative actions.

Transaction-cost theory is the key to understanding cooperation among localities. As speculated by Norris (2001), some localities might not want to cooperate with others or even end a cooperative relationship. When involved parties unilaterally pursue defection to promote or protect their self-interest in an environment of distrust is what Williamson (1993) refers to as *opportunism*. A mutual contract requires parties to fulfill certain promises, and each participant bears some amount of risk that stems from other collaborators not fulfilling their part of the promise. According to Coleman, the risk is warranted as long as one expects gains by doing so, and that a decision to take such risk implies that the parties trust one another (Coleman, 1990). Besides the costs arising from individual behavior, cooperation is also dependent on the cost of production and management of goods and services mutually (Commons, 1931). According to Coase (1960) and Williamson (1979), localities compare the cost of in-house production of urban services with that of joint production, and as long as joint production is cheaper they engage in cooperation. As well as the cost of production, localities face other types

of transaction costs such as the cost of finding parties, the cost of negotiating agreements, and the cost of monitoring and enforcing compliance with the agreement (Macher & Richman, 2008). Additionally, public-sector transaction-costs involve time and effort devoted to making collective decisions, costs of elections and meetings, citizen participation, and time required for official action (Oakerson, 1999). When these costs are much higher, as Norris (2001) points out, it is difficult for localities to engage in a collective action.

Monoentrists argue that reform models involve less transaction costs among localities since they do not rely on mutual trust between them. Scholars suggest formation of embedded networks among local units that are enforced through social, economic, and political relationships to reduce transaction costs arising from distrust and risk aversion (Feiock, In Won Lee, Hyung Jun Park, & Lee, 2010; Lee, Feiock, & Lee, 2012). This suggests that social, economic, and political characteristics of localities have some influence over their decision to cooperate with one another. The following section summarizes the theories and the scholarly works pertaining to the influence of local characteristics on interlocal cooperation.

Cooperation and Local Characteristics

The theory of cooperation puts special emphasis on characteristics of the parties involved, and the nature of the environment they all operate within. Axelrod (1984) suggests that fixed characteristics of participants are associated with certain stereotypical behaviors. He calls them *labels*. Similarly, participants develop a *reputation* over time that can encourage or hinder cooperation. Localities get labelled in various ways, which

eventually become their identity. Rich and poor; high class, middle class, and poor neighborhoods; white neighborhoods and black neighborhoods; city and suburb, downtown and uptown, and the like. In the United States, city centers have been conventionally pictured as having higher concentration of blacks, poor whites, and working-class migrants. Central-city residential areas also connote higher instances of boarded-up houses, run-down neighborhoods, decaying, old industrial infrastructure, poor-quality urban services, poor-quality schools, drug addiction, crime, and the like, whereas central city business centers suggest a picture of a high-rise skyline with gleaming, glass-clad office buildings, hotels, convention centers, and the like.

Suburbs, on the other hand, have an image of having lower population densities with large single family houses, clean environment, higher percentage of whites, more educated and highly skilled workforce, higher incomes, better schools, nice parks, and less crime. Such variations in characteristics affect cooperation among localities. Neighboring cities with similar population characteristics are likely to have common preferences for public services, and therefore are comfortable collaborating with localities they perceive as compatible types.

Localities easily build trust with other localities with similar characteristics and preferences. According to Axelrod, a certain reputation is attached to various *labels*. In an urban context, African-American neighborhoods have reputations for harboring crime, poverty, drug addiction, and other socially unacceptable activities. Similarly, poor, black, or migrant communities are considered to demand more public services and pay fewer taxes. These groups are also considered to put additional stress on the health-care system and redistributive social programs. Thus well-endowed localities are unlikely to engage

in cooperation with their needy neighbors. Axelrod (1984), however, implies that characteristically different localities can also engage in cooperation if they build up sufficient trust through repeat interactions and consistent good behavior.

Besides drawing from the general theories of cooperation, urban literature is rather lean on theories explaining the effects of local characteristics on urban interlocal cooperation. Probably the first influential work on interlocal relations is Tiebout's theory of local expenditure (Tiebout, 1956). This is, however, a model of population sorting and interlocal competition rather than a model for cooperation. Models of cooperation between fragmented localities are explained by ACIR (1985, 1987), Parks and Oakerson (1989), and Oakerson (1999, 2004). These studies suggest group size (fragmentation) possibly influences interlocal cooperation. Oakerson (2004) and Post (2004b), building on the work of Olson (1971), argues that the transaction cost of interlocal cooperation increases with increasing group size. As the number of localities in a region increase, transaction costs—the cost of organization and operation—also increases. Increasing number of participants in regional collective action encourages some to free-ride on collective benefits. However, Oakerson (2004) believes that communities that are unable to build sufficient mutual trust and those unable to overcome the problems of free riding are the candidates for consolidation.

In addition to group size, territorial proximity is another factor that affects interlocal cooperation. Axelrod (1984) posits that territorially proximate neighbors interact more, and successful strategies spread to other subsequent jurisdictions. Sometimes it might be necessary for a locality to imitate certain policies adopted by its neighbor(s) to prevent cross-border spillover. For example, different zoning and tax

policies adopted by two neighboring localities might encourage residents and businesses to strategically move across jurisdictions to gain respective benefits provided by both. Tax-sharing covenants or cooperatively adopted local policies will render any strategic behavior by the residents unnecessary. Eventually neighboring communities may face similar problems and be forced to adopt similar policies. This is only true if these localities are characteristically similar and people are indifferent about choosing where to live (or run their businesses). Even though neighboring localities have different capacities for production and provision of urban services, proximity makes it possible for neighboring localities to jointly produce certain urban services and enjoy efficiency through scale economy. Post (2002) has reported increased probability of local cooperation where local government densities are higher.

Size and proximity are much simpler characteristics when it comes to interlocal relations. Parks and Oakerson (1989) and Oakerson (1999) limit their arguments to these physical characteristics when discussing variations between localities participating in the local public economy. However, localities have a differing mix of economic, social, and political characteristics that dictate how much capacity and willingness they have to contribute to the ecosystem of regional governance. Few theories are established about how localities having different characteristics cooperate with one other. Probably the closest proxy would be to use the theories of segregation, assuming that the reasons forcing localities to segregate are the reasons preventing them from cooperating. Research in the field is fairly consistent that localities segregate because of difference in preferences, which reflect lifestyle choices as well as economic capacities. People segregate into different jurisdictions according to their economic classes, racial

differences, and political choices. Suburban localities are generally wealthy, and city centers are generally poor. Wealthy localities have better schools and better employment opportunities, while poor localities do not. Poverty, lack of infrastructure, and lack of opportunities gradually convert poorer localities into crime pockets. The more this happens, the more families move to the suburbs and the suburbs become more segregated from their central cities (Burns, 1994; Downs, 1994; Ledebur & Barnes, 1992; Nivola, 1999). It is logical to assume that local characteristics such as economic condition, fiscal capacity, incomes, poverty levels, education levels, racial mix, and political choices influence the way localities interact. In the next section, relevant scholarly works on local characteristics and interlocal cooperation are discussed along with their strengths and shortcomings.

Scholarly Research on Local Characteristics and Interlocal Cooperation

Intergovernmental relations as a field of research came into the spotlight after the establishment of Advisory Commission for Intergovernmental Relations (ACIR) in 1959. Interests in local government interactions became prominent when ACIR started conducting custom surveys of local characteristics. Initially, the studies were more aligned towards city-suburban divide, metropolitan fragmentation, economic development, and income inequalities. This scholarly field is still very young compared to economics, political science, and other social sciences. Among different streams of local governmental research, studies of local interactions share its platform with literature on economic development, policy analysis, and public administration. This body of

literature focuses on local competitiveness, economic growth, and fiscal capacity as well as race relations, inequalities, and political characteristics.

Studies on Fragmentation and Interlocal Cooperation

Fragmentation is perhaps the most studied topic by scholars of local collective action. Fragmentation by itself is not a local characteristic; it is a representation of jurisdictional proliferation in a region. However, higher fragmentation represents greater diversity of preferences for public policies in the region. When regions fragment, localities of various characteristics sort themselves within the regional geography, and then engage in cooperation and competition on various policy issues. Fragmentation has been theorized to create the potential for, as well as, hinder interlocal cooperation. As urban fragmentation is caused due to self-sorting of residents into their preferred jurisdictions, localities naturally assume competition with one another. However, fragmentation also increases the probability of cooperation by enlarging the pool of potential collaborators in the region.

Post (2002) finds negative effects of regional fragmentation on interlocal cooperation. She uses the number of local governments per 10,000 people as a measure of fragmentation and the event-count of interlocal monetary transfers to measure interlocal cooperation. Such an *event-count* records number of instances of interlocal transfers—revenue as well as expenditure—as a measure of cooperation. This method of measurement does not provide information about the scale of cooperative engagement. A single instance of a large sum of monetary transfer between localities might be larger than several instances of transfers of smaller amounts. While each instance is counted as

one unit of cooperation irrespective of the amount of money involved, the measure does not accurately represents the extent of cooperative activities between localities.

Other studies have also reported a negative impact of fragmentation on interlocal cooperation. Olberding (2002b) finds a higher degree of fragmentation and competition correlates to a lesser degree of regional cooperation in economic development. Post and Stein (2000) find no impact of fragmentation on regional economic interdependence. Rawlings (2003) also reports no significant causal relationship between fragmentation and metropolitan-area collective action. Likewise, Hawkins (2010), reports lower probability of cooperation when metropolitan areas are highly fragmented. Kwon and Feiock (2010) also report a negative correlation between fragmentation and interlocal cooperation for the delivery of urban services.

Fragmentation of urban regions also implies that jurisdictional boundaries overlap among different general-purpose and special-purpose local governments. Parks and Oakerson (1993) find such overlaps to facilitate intergovernmental cooperation. On a similar note, Johnson and Neiman (2004) report findings from a survey carried out among local administrators that localities cooperate in economic development initiatives even when majority of them see one another as competitors.

Krueger (2006), while measuring interlocal cooperation in terms of interlocal revenue transfer per capita and fragmentation as number of governments per capita, presents an inconclusive finding regarding the relation of fragmentation and interlocal cooperation.

These studies use a variety of methods to operationalize their variables, which could be one reason for discrepancy in their findings. Johnson and Neiman use survey

data in which respondents are asked if they identify their neighboring localities as competitors. Hawkins (2010) uses a per capita measure of fragmentation and a dichotomous measure of interlocal cooperation. Kwon and Feiock (2010) also generate a binomial measure of interlocal cooperation by asking city administrators whether they have considered pursuing joint delivery of urban services with their neighbors.

Literature presents an indecisive picture regarding the relation between metropolitan fragmentation and interlocal cooperation. As identified by many scholars (Hawkins, 2010; Krueger, 2006; Post, 2002), fragmentation does seem to work as a double-edged sword. Analysis using large scale aggregated data is needed to find a conclusive answer.

Studies on Local Economic Condition and Interlocal Cooperation

Fragmentation creates localities with discrete preferences, resources, and capacities for collective action. Lee and Feiock (2012) shed some light on unequal needs, resources, and inequities in power and accountability between localities. They suggest that localities that share similar socioeconomic attributes and political institutions are more likely to create linkages with each other as they are more likely to share economic development agendas and policy preferences. They conducted a survey among select residents in the Orlando-Kissimmee metropolitan region to substantiate their theory. Economy, economic strength, and economic competitiveness are perhaps the most discussed terminologies in regionalism literature. This is the most common and apolitical topic of interest for both the reformists and the revisionists. Economic weakness can force a locality to seek partners in service delivery and infrastructure development.

Elected officials of fiscally weak localities have been reported to advocate for annexation bills expecting to improve the economic condition of their governments (Rusk, 1993). Others have also identified the fiscal state of localities as a primary impetus for inter-local cooperation (Downs, 1994; Ferris & Graddy, 1986; Foster, 1997; Haughwout, 1999; Heeg et al., 2003; Sonenblum et al., 1977).

Fiscal capacity of a local government impacts the quality of public services they can provide to their citizens and also influences the ability to access capital markets to improve infrastructure. A study focused on a five-county region of Southern California reported a greater probability of outsourcing municipal services by fiscally stressed localities (Joassart-Marcelli & Musso, 2005). Other studies show that cities with a higher tax burden per capita are more inclined toward contracting out their public services to neighboring governments or private agencies (LeRoux & Carr, 2007; Morgan, Hirlinger, & England, 1988). Morgan and Hirlinger (1991) measure local fiscal pressure in terms of the percentage of local revenue from federal and state government sources and show a positive but feeble correlation with inter-local cooperation. Some other studies, however, find local fiscal health to be an insignificant factor in inter-local cooperation decisions (Chen & Thurmaier, 2009; Feiock & Park, 2005). The difference in results can be attributed to the difference in methodology employed by the researchers.

Morgan and Hirlinger (1991) use interval-level information that measures magnitude of interlocal cooperation, whereas Chen and Thurmaier (2009) use discrete measure of instances of cooperative agreements. Chen and Thurmaier's (2009) measure of fiscal health and its influence on cooperation is based on a survey questionnaire that asks city managers if they find it to be a substantial impetus. They do not explain what

measures were taken to standardize the responses and control for biases; they use a relatively small sample of data, and their coefficient does not attain statistical significance. Similarly, Feiock and Park (2005) use percent of revenues from the locality's own sources to measure fiscal health. While it is a reliable metric, it could have generated different results if a scalar measure of interlocal cooperation was used.

Hawkins (2010) reports that fiscal stress of a locality negatively impacts the probability for joint venture. This study uses a binomial dependent variable that reports at least one instance of collaboration. He measures fiscal stress as long-term debt per capita. This metric has an endogenous relation with the dependent variable. Localities with higher debts per capita are not good candidates for a joint venture in economic development because they have a bad credit rating and are difficult to trust. Besides, long-term debt does not accurately assess a locality's fiscal capacity as localities experiencing high economic growth have better credit scores and have easier access to long-term debts. Another weakness of that study is the use of employment in the manufacturing sector to measure local economy. In the present state of urban deindustrialization and rise of the service economy, it is perhaps not the best measure of economic vitality.

Even if localities are enjoying good fiscal health, large-scale public goods and/or goods characterizing high asset specificity are difficult for small communities to produce. When local governments need to invest in specialized equipment and human resources, they generally seek a partnership with their neighbors to share costs (Brown & Potoski, 2003). Fiscally stressed and economically declining localities are not alone in seeking partners. Liebman et al. (1963) report localities with thriving economies seeking

partnerships with localities having comparable economic conditions. This is an old study and needs to be reexamined using current data.

Metropolitan status, larger population base, higher per capita income, and higher job-growth rate are all accepted signs of a healthy economy. Localities with an economically sound tax-paying population have an increased financial capacity for investing in large infrastructure than their surrounding smaller suburban localities. They also have easier access to credit markets. It seems less likely that those localities would seek partners for cooperation (Foster, 1997). However, economically sound localities are also found to cooperate when there are possibilities of cost reduction and efficiency gains through scale economy (Heeg et al., 2003).

Cities with declining economies—those facing reduction in employment opportunities; reduction in income; outmigration of skilled labor; and higher percentage of low income and needy residents—can be expected to pursue cooperation in delivery of urban services as well as economic growth. A number of scholarly works support this hypothesis (Feiock & Park, 2005; Foster, 1997; LeRoux & Carr, 2007; Olberding, 2002a; Orfield, 1997b). However, Lubell et al. (2002) found per capita income to be positively correlated with the likelihood of cooperation. These variations in findings can be attributed to small sample size, methods of measuring variables, and research methods used. Feiock and Park (2005), and LeRoux and Carr (2007) examine the relationships within a small region using dichotomous dependent variables, whereas Olberding (2002a) uses a numerical count of regional partnerships within select metropolitan regions. Both methods of measurement fail to reflect the magnitude of cooperation. A sufficiently large

nationwide study using a scalar measure of cooperation will provide a more generalizable conclusion.

Age and the size of the economy are other variables that influence the behavior of a locality. Older cities have outdated service infrastructures that require considerable investment to modernize. Those cities are more inclined to cooperate either to compensate for insufficient in-house production or to expand their service area for more revenue. On the contrary, older cities that already have the necessary infrastructure required to produce their services in-house are less interested in seeking partners. A recent study found that older, highly developed communities with large populations favor direct provision of services (LeRoux & Carr, 2007) and that newly incorporated cities relied more on outsourcing of services (Joassart-Marcelli & Musso, 2005). On the contrary, another study found no difference between decisions to provide services externally between industrial and postindustrial cities (Brown & Potoski, 2003). Brown and Potoski (2003) also carried out a deeper analysis on the size of the economy where they found that large cities within a metropolitan area mostly produce their services in-house. However, cities outside metropolitan areas are found to seek external sources of service production. On a similar note Joassart-Marcelli & Musso (2005) find smaller suburban cities to be more inclined toward outsourcing their urban services.

Studies on Social Characteristics and Interlocal Cooperation

Racial mixes and the average age of residents have been theorized to impact local intergovernmental relations. Localities are thought to have tendencies to racially homogenize. In fact, preference for racial segregation is considered a good reason for the

formation of new local governments (Burns, 1994). Communities eager to maintain racial hegemony see interlocal cooperation as a threat to their control over local politics. Savitch and Vogel (2000) report disinclination of minority African-American population groups toward consolidation of Louisville City and Jefferson County. Likewise, Hamilton (2004) reports aversion toward regional collective action in Chicago due to the presence of incompatible racial pockets. Feiock and Park (2005) also report that racially homogenous communities have a higher probability of engaging in cooperation for economic development.

In another study, Hawkins and Feiock (n.d.) report a higher percentage of African Americans show preference for interlocal cooperation in the delivery of urban services. On the contrary, Lubell et al. (2002) report racial homogeneity measured in terms of the percentage of African-American and Hispanic populations to be negatively correlated with the probability of local partnerships, while LeRoux and Carr (2007) cite results that are inconclusive on the role of race on inter jurisdictional cooperation.

Based on the literature, it is difficult to conclude if race plays a positive or negative role towards cooperation. Hamilton's (2004) research uses examples such as Chicago and Pittsburg that are historically known to have racial issues. LeRoux and Carr's (2007) study is also localized in a handful of counties in Michigan that are known to have sharp racial segregation, but the paper stops short of discussing biases due to the history of racial incompatibility. Probably economic and fiscal reasons are more responsible than racial reasons. Perhaps Norris (2001) and Williams (1967) correctly theorized that racially motivated localities cooperate in the issues of service delivery but

avoid collaborating in policy issues to maintain their political control. Further research is needed to conclusively generalize localities' behavior on this issue.

Interlocal cooperation is also affected by the demographic composition of the localities. Literature finds mixed influence of the senior population and the population approaching retirement on interlocal cooperation. Morgan and Hirlinger (1991) report that higher percentage of senior population in localities is correlated with less cooperation among localities. They argue that senior people are less open to changes in service delivery mechanism. Joassart-Marcelli and Musso (2005) also find that urban services are more privatized in cities with lower percentage of elderly population. LeRoux and Carr (2007), however, report that localities with higher percentage of senior population cooperate more on joint production of expensive urban utilities. They argue that elderly population have higher demand for cheaper public services and they prefer mechanisms that promises to lower costs of producing them.

Studies on Geographic Proximity and Interlocal Cooperation

Geographic proximity with neighbors allows localities to easily reap benefits from scale economy. Studies have suggested that when local governments are geographically near to one another, they can be expected to collaborate more often for infrastructure and services than when they are far apart (Feiock, 2007; Post, 2002). Local governments are inclined to cooperate not only in joint production of urban services, but also on common regional problems when they are closer. As distances between localities decrease, policy externalities easily spill over across boundaries and it is in the best interest of the localities to engage in collective action to internalize them (Peirce et al., 1993).

Public goods are territorial in nature, and they can only be consumed by users in and around the locality where they are produced. At the same time, it is much easier to jointly produce and consume local services in collaboration with a contiguous neighbor than with a noncontiguous one. Territorially integrated neighbors have been suggested to engage in service cooperation more easily than neighbors that are farther away (Heeg et al., 2003). Post (2002) uses government density as a measure of proximity and reports that the geographic density of localities in the metropolitan regions is significantly and positively related to the incidence of local intergovernmental agreements. This study uses a sufficiently large sample size but fails to measure the magnitude of interlocal cooperation. Minkoff (2012) uses a probabilistic method using a binomial measure of interlocal cooperation and finds that geographic proximity positively correlates with cooperation among local governments. This study is based on the data collected from selected localities in Denver and does not have sufficient sample size needed for generalization of findings.

Studies on Geographic Location and Interlocal Cooperation

Location of a jurisdiction near the city center compared to the suburbs also affects their characteristics. Most literature portray sharp racial and economic differences between central and suburban localities, and paint a compelling picture of city-suburban animosity, which rules out the possibility for cooperation (Hamilton, 2004; Peirce et al., 1993). However, studies that isolate the effects of location, controlling for other socio-economic characteristics, have mixed conclusions. Controlling for the effects of population size, Brown and Potoski (2003) find that governments located in metropolitan

areas have higher probability to joint contracting for service delivery. On the contrary, another study found that suburban localities, in general, are more engaged in cooperative measures for service production than those in the central city (Joassart-Marcelli & Musso, 2005). Theory, however, suggests that proximate localities can reap benefits easily irrespective of their sizes. Rawlings (2003), on the other hand, reports no influence of central location on cooperative endeavors.

Need for This Study

The literature related to local intergovernmental relations paint an encouraging picture of scholarly interest in this research area. A number of diverse scholarly articles touch on the context of the relationship between local characteristics and local cooperation. Some of those studies are focused solely on cooperation for economic development; some primarily examine city-suburb relations, and others focus on the role of administrative structures. While some scholarly studies examine the influence of selected local characteristics on a locality's ability and preference for cooperation, most of them are focused on spotting the *existence* of cooperative agreements rather than measuring the scale and extent of cooperative endeavors.

A majority of studies use dichotomous measure of interlocal cooperation (Feiock & Park, 2005; Ferris & Graddy, 1986; Hawkins & Feiock, n.d; Hawkins, 2010; Johnson & Neiman, 2004; Kwon & Feiock, 2010; LeRoux & Carr, 2007; Minkoff, 2012). These studies operationalize their dependent variable—measures of interlocal cooperation—in terms of the existence of cooperative activity. Respondents are asked if their governments

have engaged in any form of cooperation within a time frame. This method of measurement does not provide information about the magnitude of cooperative activity.

Weakness in measurement of the dependent variable is also associated with studies that rely on the numerical count of interlocal contracts (Chen & Thurmaier, 2009; Krueger, 2006; Lee et al., 2012; Olberding, 2002a; Post, 2002; Post & Stein, 2000). Counting the number of interlocal contracts does not represent the amount of monetary transaction. Additionally, interlocal contracts only represent formal cooperation among localities while leaving out cooperation through informal handshake deals.

Other studies that provide compelling explanations about the relationship between local characteristics and local cooperation, use very small sample data and are focused on specific metropolitan areas. Their findings are intriguing but cannot be generalized. For example, Johnson and Neiman (2004) limit their study to medium sized cities in the state of California. Lee et al. (2012) focus on the Orlando-Kissimmee metropolitan area. Similarly, Foster (1997) focuses on the Buffalo metropolitan region, and Jossart-Marcelli and Musso (2005) limit their scope to a five-county Southern California region. Chen and Thurmaier's (2009) study is also limited to local governments in the state of Iowa. Minkoff (2012) uses select cities in Colorado, while Hamilton (2004) focuses on Chicago and Pittsburgh. This piecemeal approach to the study of local cooperation is probably another reason for variations in their findings. Aggregate studies like the one by Krueger (2006) is not directly focused on interlocal cooperation, and another by Ferris and Graddy (1986) lacks currency. There is a need for a comprehensive and generalizable study that can provide conclusive answers about the influence of local characteristics on interlocal cooperation using aggregate data and a dependent variable that measures not only the

instances of cooperation but also the magnitude. The following chapters demonstrate how this can be accomplished.

CHAPTER III

RESEARCH QUESTIONS, HYPOTHESES, AND METHODOLOGY

Research Question

Urban literature generally agrees that most prevailing urban problems are caused by cost spillovers resulting from fragmentation and self-governance. Previous chapters have shed light on the concept of governance without government as the most appropriate model to resolve longstanding and pressing urban issues without imposing much restriction on public choice and jurisdictional autonomy. Parks and Oakerson (1989) introduced the idea of “local public economies” that explained how multiple overlapping, and cross-cutting jurisdictions might organize themselves to reap benefits of scale economy in service production as well as to resolve cross-border problems. Transaction-cost theory provides a generic foundation for the understanding of any type of cooperation among individuals and institutions. The literature suggests that localities both in cities and suburbs need to work together to solve mutual problems, and it also tells how obstacles to institutional collective action can be overcome through communication, interaction, and joint ventures. Cities are competing and cooperating with their neighbors at all times in various policy areas; and some localities cooperate more than others. The most logical reason for the difference in level of cooperation among localities could be that localities are characteristically different to begin with. Some localities are rich while

others are poor, some have a higher capacity for service provision; some have numerous internal problems and a high degree of fiscal stress; some have specific cultural reputation; some have better resources; and some are more globally connected than others. Also some are centers of commerce; some are manufacturing hubs while others are bedroom communities. The literature does not provide a sufficient explanation for how local characteristics influence the cooperative decisions of localities. This manuscript strives to answer one question: Which local characteristics encourage interlocal cooperation? The following section elaborates further on research questions and constructs the hypotheses for this study.

Specific Research Questions and Hypotheses

This manuscript seeks to answer the following questions:

Q1: Does metropolitan fragmentation increase or decrease interlocal cooperation?

Q2: How does the variation in economic capacity between localities affect interlocal cooperation?

Q3: How do the variations in social class, demographics, and race influence interlocal cooperation?

Three research hypotheses are proposed to answer these questions.

H₁: Localities in politically fragmented metropolitan regions and those in close proximity to one another engage more in interlocal cooperation.

H₂: Economic distress pushes localities to seek partners for cooperation.

H₃: Homogenous racial and economic classes favor interlocal cooperation.

The first hypothesis of this study focuses on urban fragmentation. *Fragmentation* is the proliferation of local governments within urban regions. Miller et. al. (1995) measures metropolitan fragmentation as the number of local governments—cities, municipalities, townships, and special districts—per unit population. The presence of more governments per capita simply signifies more preferential sorting within a region. This also suggests an increase in the number of government units competing for limited resources. Teibout (1956) suggests that localities within a fragmented region can only be expected to compete with one another in order to provide attractive tax-services bundles to targeted population. Peterson's (1981) city-limits hypothesis also points toward a competitive scenario between local governments with no room for cooperation. On the other hand, Parks and Oakerson (1993) believe that fragmented localities can easily engage in regionally integrative production structures. Feiock et al. (2004) suggest that competition and cooperation can coexist. Hawkins and Feiock (n.d.) also claim that cities have been found to cooperate even when competition is the generally accepted norm. The argument that cities and suburbs are economically interlinked and their individual prosperity is tied to the regional prosperity (Savitch et al., 1993) also suggests that localities might cooperate for mutual benefits.

Olson's (1971) theory on group sizes says that the more group size increases, the more difficult it is to get individuals to cooperate because of the increase in the transaction cost of enforcement and monitoring mutual agreements. This manuscript argues that this logic does not apply to urban localities. Urban localities have fixed geographies, and irrespective to the number of localities in the region, an individual locality always has a fixed number of neighbors. In selected policy arenas such as the

maintenance of air and water quality many non neighboring localities collaborate on regional issues, but the geographically fixed nature of urban infrastructure and the effects of local policies suggest that localities are concerned more about interacting with their immediate neighbors. Therefore increased group size might not impact interlocal cooperation in the way assumed by Olson's theory. Rather, increased fragmentation enables localities to capitalize on service provision capacities of their neighbors and increases the potential for sharing as well as and minimizing risks. In consonance with the theory suggested by Parks and Oakerson (1993), it is hypothesized that increasing metropolitan fragmentation increases the possibility of interlocal cooperation.

Urban literature also suggests that fragmentation produces centrifugal forces, creating new localities outside the city—generally in suburban areas, and sometimes even further away in adjoining rural areas also known as *exurban cities*. Proximate neighbors might share more across boundaries than others that are geographically separated. When localities are too close to each other, service-production collaboration is easy to materialize. In such a scenario, the policy effects are also difficult to contain within jurisdictional boundaries. A shared local economy can easily blur jurisdictional lines and create demand for complementary land uses. Proximate localities can easily realize economies of scale by cooperating with their neighbors. Therefore, localities that are in close proximity with their neighbors are expected to engage more in interlocal cooperation.

The second hypothesis focuses on the effect of a local economy on interlocal cooperation. Transaction-cost theory suggests that localities cooperate when it is less expensive for them to engage in joint production (or provision) of urban services.

Localities either count on economic benefits or have an economic need to engage in cooperation. Economic benefit is realized when it is cheaper to produce services jointly. Economic need arises when a locality is not able to continue to produce or provide certain services and is forced to seek partners for service continuity.

The local economy can be viewed in two different ways: (1) by the economic vitality of the locality in general, which is traditionally measured in terms of the wealth of the residents, opportunities for employment, and the existence of a thriving commercial sector; and (2) by the fiscal capacity of the governing institution, typically measured in terms of revenue collected from local sources, the ability to maintain existing infrastructure and develop new ones, and the capacity to pay off debts. Generally these two aspects of a local economy are complementary. Wealthier residents, higher property values, commercial, retail, and entertainment activities generate revenue for the governing institution. As a result, the governing body has higher credit worthiness and more accessibility to capital markets. It can then invest in more services, levy fewer taxes, and further enhance the attractiveness of the area.

Economically thriving communities with better employment opportunities, higher wages, and better living conditions can attract migrants from surrounding areas. By employing zoning regulations and assigning land uses, localities can generally prevent unwanted low-skilled, working-class residents from moving in permanently. They adopt zoning regulations that favor high-end services and infrastructure to attract wealthy residents from the surrounding area. Such in-migration puts pressure on infrastructure and even though these localities have the capacity to invest in developmental activities, they are not able to do it quickly enough to be commensurate with the rate of growth.

Developmental activities require large investments, and localities seek ways to minimize risks. One way to meet the increasing service demand and lower risk on investment is to engage in partnership with neighboring localities. Localities can be expected to engage in cooperation with neighbors that have a strong and stable economy. Poorer neighbors generally have lower investment capacities and bad credit ratings. Any joint venture with such localities would be a risky endeavor.

In contrast, economically distressed localities might find it much easier and more effective to provide urban services to their residents by using cooperative means of production. Poor localities cannot collect much revenue from property taxes as property values are lower in their jurisdictions. Lower property values attract more poor people from surrounding areas (most of them probably employed as unskilled labor in nearby thriving localities). With a higher tax burden, lower tax capacity, and high demand for urban services due to the influx of working-class people, such localities face tremendous fiscal pressures. Probably they can ensure service continuity to their residents only by cooperating or collaborating with neighboring localities.

The third hypothesis of this research focuses on the influence of racial and economic classes on interlocal cooperation. Preferential sorting based on the social characteristics of residents is another outcome of fragmentation. People also make decisions about their residential location based on factors such as income levels and racial identity. People prefer to live in localities where they are in the majority. Burns (1994) claims that preference for racial segregation is the major reason for the formation of new local governments. Similarly, Savitch and Vogel (2000) found that minority groups were against the consolidation of Louisville city with Jefferson County due to the

fear of political dilution. Race and class are strongly correlated in most American metropolitan areas. The extant literature on fragmentation and segregation suggests that the white majority tends to segregate from blacks by migrating into the suburbs. As suggested by the findings of Savitch and Vogel (2000) minority blacks also seek to segregate from whites. While considering race as an independent factor, localities with contrasting racial majorities are not expected to cooperate with each other. However, racial segregation often implies economic segregation as well. In most localities, racial minorities are also found to be poor, pay fewer taxes, and demand more services than what they pay for (Downs, 1994; Ledebur & Barnes, 1992). These localities are generally fiscally stressed and are better off cooperating with their neighbors irrespective of racial attitudes.

Racial homogeneity has different meanings at different geographic scales. Higher racial homogeneity of a metropolitan region implies that the localities within the region are more likely to have similar racial makeup. In that case cooperation is comparatively easy to achieve. Hence racially homogenous metropolitan regions are expected to experience more aggregate interlocal cooperation.

Racial homogeneity of a locality represents its internal racial structure. Its attitudes towards interlocal cooperation depend on the racial characteristics of its neighbors. If the neighboring localities are also internally homogenous with a similar racial majority, cooperation is easier between those localities. Conversely, two differently homogenous neighboring localities might have difficulty cooperating because of racial biases and distrust. The very fact that segregation is the result of the white flight, and the African-Americans' preference for a racial clout suggests that either racial majority at the

local level does not approve of interlocal cooperation. Therefore localities with contrasting racial majorities are not expected to engage in interlocal cooperation with one another.

Seniors, retired, and a population nearing retirement comprise the demographic segment that can be expected to have a contrasting attitude toward interlocal cooperation compared to its occupationally active counterparts. These people often have less disposable income and more per capita demand for urban services. They generally have no other ideological biases except that they prefer to reside in inexpensive localities with inexpensive services. Public service is more of a necessity than lifestyle preference for this population group. They can be expected to vote for any service provision mechanism that ensures availability and affordability of urban services for a long time.

The income class of the population is another variable explored in this manuscript. Regions with higher levels of economic inequality can be expected to experience lower levels of interlocal cooperation. Regional inequality implies that residents of the localities in the region have sharp differences in income levels. Poor communities might be better off cooperating with their wealthier neighbors, but wealthier areas have less incentive to do the same. Cooperation cannot be expected in such an environment that lacks reciprocity. Conversely, in regions with low income inequality, all neighboring localities have similar economic characteristics, and therefore similar preferences for urban services. Economically homogenous regions can thus be expected to experience more aggregate interlocal cooperation.

Research Methodology

This study uses a multivariate quantitative method to examine the hypothesized relationships. Descriptive statistics are used to show the magnitude of interlocal cooperation and the extent of various local characteristics. Preliminary relationships are studied using correlation matrices, followed by multivariate regression to identify the direction and magnitude of the effects of various local characteristics on interlocal cooperation. The dependent and independent variables, and the control parameters used in this analysis are described in succeeding sections.

Units of Analysis

Local government, including counties, cities, and townships within the metropolitan region, is the unit of analysis for this study. The Office of Management and Budget (OMB) defines *metropolitan statistical areas* as having at least one urbanized area of 50,000 or more population, and adjacent territory that has a high degree of social and economic integration with the core as measured by commuting ties. In this sense, a metropolitan statistical area is the closest approximation of an economically linked urban region. Whereas metropolitan areas represent the extent of an urban economic region, localities are the building blocks of that region. Although special-purpose governments such as special districts and public authorities also are functionally specific and cross-cutting jurisdictions, this manuscript only uses general-purpose local governments for the analysis. The rationale to limit the analysis only to general-purpose governments is first that these units sufficiently represent an urban voting population and, second, they have unique and non overlapping boundaries that make data comparison easier. This study

uses relevant information of localities in 51 of the largest Metropolitan Statistical Areas (MSA) in the country, selected on the basis of population size of one million or more per the 2010 census count. Component counties for those metropolitan areas, and all sub county-level local governments—cities, municipalities, and townships—are identified per census designation and use the integrated government directory of the census of governments. Selected socioeconomic, political, and geographic characteristics for individual localities are gleaned from the census summary files and the American community survey 5-year estimates. Quantitative analysis is carried out at both MSA as well as local levels. Area-wide characteristics such as fragmentation and income inequalities are appropriately measured across localities at the MSA levels, whereas economic and social variations are measured at both local and regional scale for the purpose of comparison.

Variables and Measures

Interlocal Cooperation (Dependent Variable)

Interlocal cooperation refers to any form of cooperative activities between county, city or municipality, and township governments. According to the census bureau the term *municipal government* refers to political subdivisions within which a municipal corporation has been established to provide general local government for a specific population concentration in a defined area, and includes all active government units officially designated as cities, boroughs (except in Alaska), towns (except in six New England States, and in Minnesota, New York, and Wisconsin), and villages². Township governments are mostly prevalent in the six New England states, New York, and

Wisconsin. However, most of them are legally termed as *municipal corporations*. In Minnesota the terms *town* and *township* are used interchangeably.

When cities, counties, municipalities, and towns engage in any form of service contracts, tax-sharing covenants, joint construction and upkeep of some infrastructure, there generally involves an exchange of funds unless they are handshake deals as pointed out by Post (2002). Interlocal cooperation is measured by using interlocal revenue transfers between selected types of local governments. Interlocal revenue information for the year 2010 has been obtained from the Census of Governments.

Local governments exchange funds among themselves for cooperative activities in a variety of budget categories including highways, housing and community development, health and hospitals, public welfare, sewerage, water, gas, electric, transit utilities, and some miscellaneous categories. Though the listed categories suggest that localities cooperate on system maintenance as well as some lifestyle services, this manuscript does not disaggregate the information to simplify the analysis.

Monetary transfers among local governments provide a scalar measure of interlocal cooperation. The magnitude of interlocal monetary transfer is the measure of the extent of interlocal cooperation between localities. This overcomes the limitations of dichotomous variables, which simply measure the presence or the absence of interlocal cooperation. It also overcomes the weakness in measuring the extent of cooperation by counting the instances of interlocal agreements. The number of interlocal agreements does not represent the magnitude of cooperative activities. Besides, interlocal contracts only represent those cooperative activities that are formally recorded. They do not measure the extent of cooperation that occurs through informal or handshake deals.

This analysis specifically uses interlocal revenue transfer (ilrev) between local governments to operationalize the dependent variable rather than interlocal expenditure as used by some other authors (S. Post, 2002; Rawlings, 2003) because the information on interlocal expenditure does not distinguish between a fund that is transferred to another general-purpose local government or to a special-purpose government. Special-purpose governments provide functionally specific services across localities. It is very rare that they receive services from general-purpose governments that necessitate any payments that would be reflected in interlocal revenue books of the localities. Interlocal revenue primarily represents cooperative activities taking place among general-purpose local governments only, which is the central focus of this study.

Independent Variables

Metropolitan fragmentation, economic distress, socio-demographic variation, and geographic proximity are the independent variables used in this study. These variables are measured both at the local-government level and the metropolitan level and are used in quantitative models representing respective geographic scale.

Fragmentation of metropolitan areas is represented by a proliferation of political jurisdictions in the regions. Many scholars have used various methods to measure fragmentation. One of the simplest methods is to count the number of local governments per capita in the region (Dolan, 1990). Bollens (1986) uses the number of governments per 100,000 people as a measure of fragmentation. Similarly, Hawkins (1971) uses the number of governments per 100,000 people as a fragmentation index. Parks and Oakerson (1992) use the number of governments per 10,000 as a *fragmentation score*. In

an effort to measure the contribution of each government to the region in addition to the regional fragmentation, Mitchell-Weaver et al.(2000) has developed the *Metropolitan Fragmentation Index* (MFI). Similarly, Miller (2002) uses the *Metropolitan Power Diffusion Index* (MPDI) that measures fragmentation as well as the division of authority among small and large jurisdictions. For simplicity, this study uses the number of local governments (excluding school districts) per 100,000 people as the fragmentation index (frag) of metropolitan regions as is used by Hawkins (1971), Parks and Oakerson (1992), and Post & Stein (2000).

Reviewing the theories of metropolitan fragmentation, it is usually a result of “voting with the feet,” i.e. residents from one jurisdiction (usually central cities) migrate to suburban areas thereby creating new localities on the periphery of the city (Tiebout, 1956). Distance between localities within the metropolitan region has been measured in terms of the density of local governments. This study uses distance between localities in terms of number of jurisdictions per 100 square miles³ as a measure of proximity (govdensity). As the density of governments increases, the number of localities per unit area also increases, thus decreasing the geographic distances between them.

A measure of central location has been used to compare interlocal cooperation among localities in the central city and those in the suburban areas. The variable is a dummy that is coded 1 for jurisdictions located in central city and 0 if located in an outlying area.

The economy variable is operationalized using the Gross Domestic Product (GDP) of metropolitan areas, per capita income, median household income, and property values. At the regional scale, Gross Domestic Product of metropolitan area (GMP)

measures its economic vitality. Conventional measures of economy such as per capita income and employment have also been used in the analysis. Employment information has been regrouped into four categories: employment in the growth sector (empgrowth), technology sector (emptech), manufacturing sector (empmanu), and the service sector (empserv). Employment in the growth sector includes employment in retail trade, finance, insurance, and real estate. Employment in the technology sector includes employment in the information sector, and professional and scientific sectors. Employment in the manufacturing sector includes all employment in the manufacturing sector, with warehousing and transportation associated with it. Employment in the service sector includes employment in public administration, health and educational services, and “other” services as designated by the census. Identifying localities by dominant industries provide the opportunity to determine which localities follow more traditional methods of growth and which economies are more adaptive to changes in the industry.

Education is another variable that represents the economic vitality of a locality. An educated workforce reflects the availability of high-skill employment. Employment categories as previously explained do not make a distinction between skilled and unskilled employment. Employment that requires skilled workforce has higher pay scale, which increases the disposable income of the residents in a locality. Unskilled jobs employ a large number of people, but the per capita pay is generally lower. An educated workforce can be expected to better understand the benefits of joint endeavors between localities and can be expected to vote in favor of them. A percentage of the population with graduate degrees has been used as a metric for education.

Institutional economic strength of a locality is its ability to generate revenue through local resources. Since property taxes make up a major portion of local revenue, median home value (homeval) has been used to assess this capacity. Higher property values reflect stronger fiscal state of the local government whereas lower property values represent distress of localities. From the consumers' point of view, higher property values also measure the demand for premium urban services.

Another measure of the economic distress of a locality is *Fiscal Stress* (fstress) experienced by the governing institution. Localities with high tax-burden and low tax-yield have been considered stressed fiscally (Miller et al., 1995). This reflects lower revenues and higher expenditures. Those localities end up borrowing from the market (as long as they maintain acceptable credit scores) or from state and federal governments to compensate for the differential. A ratio with the total expenditure of the locality as the numerator and its total revenue as the denominator has been used to measure fiscal stress. Such a ratio has been suggested as a metric of fiscal stress of local governments in the CBO Economic and Budget Issue Brief (Delisle, 2010). When the expenditure is less than the revenue, the ratio assumes a value less than one. This suggests that localities have been able to generate sufficient revenue to cover their costs. The numerical value of fiscal stress of more than one signifies that expenditures exceed revenue. This is the situation when localities either have to start reducing their expenditures by downsizing or shutting down some services or pursue external financial support such as state and federal governments, to meet their expenditures. In either condition, those localities are considered to be in a state of fiscal distress.

Sociodemographic variables include racial homogeneity, senior population, income classes, and the measure of income inequality. Conventionally, racial makeup is measured using a percentage of the black population. Since whites are considered to be the majority group, an increase in the black or African-American population signifies a more heterogeneous locality in conventional terms. In addition to the conventional measures of race, this study uses homogeneity to measure racial makeup of the locality. Homogeneity has been calculated as the absolute differences between percentages of the whites and the blacks in the community. Homogeneity scale ranges from 0 to 100. A value of 100 means that the locality has people of only one of the two races, and a score of 0 signifies the presence of equal numbers of residents of the two races

Age of the population is another variable used in the study. Assuming that people's preferences are dependent on their ability to earn money and desire for a certain lifestyle, this study focuses on the difference between a younger, economically active demographic and a retired senior demographic. Age is measured in terms of the percentage of the population 65 years and older (seniorpop) in the locality.

Other social variables used in the analysis are income class and income inequality. The U.S. Census Bureau determines poverty using a threshold⁴ of the number of family members and their combined incomes compared to the consumer price index. However, this poverty threshold does not vary with geography. This study categorizes income classes (class) in terms of their dispersion from the median household income. Percentage of households earning less than 50 percent of the median household income of the locality is categorized as poor, whereas those earning more than 150 percent of the

median income are grouped as rich. All households between those two categories are considered middle class (mclass).

Wealth differences between populations across localities have been measured using the Gini coefficient⁵ of income inequality. Gini coefficients have been calculated for each metropolitan region using the information on household-income groups published in the American Community Survey. Gini calculated for the MSAs represents income inequality within the metropolitan regions, which also represents inequality between localities since localities are the building blocks of MSAs. It makes more sense to measure differences between localities in the metropolitan region than to measure inequality within the locality because the fragmentation theory suggests that localities are internally homogenous. The value of the Gini coefficient ranges from 0 to 1, where values close to 0 imply perfect equality, and those close to 1 suggest perfect inequality.

Four control variables are used in the analysis. They are age of the economy, type of the government, census designated regions, and population size. Age of the economy (agecity/agemsa) can influence levels of interlocal cooperation. Older localities generally tend to have higher levels of public-service infrastructure that they can leverage with nearby localities to achieve economies of scale. At the same time older localities also tend to have outdated infrastructure that is overconsumed and in need of costly repair. These localities might simply seek cooperation with their neighbors to keep maintenance costs down irrespective of their economic state. Age of the economy is measured as median age of the home built in the locality, similar to the one used by Ijla, Ryberg, Rosentraub, & Bowen (2011)

Type of government (govtype) is another control variable used in the analysis. This variable is expected to measure the difference in voters' preference for cooperation if they are a county government (county), a city government (city), or a township (town). Similarly, dummy variables for census-designated regions– northeast (ne), Midwest (mw), the south (s), and the west (w) are used to control for regional variations to generalize the findings. A list of all research variables, their measures, and their sources are presented in Table 3.1.

Table 3.1
List of Research Variables

Variables	Measures / Sources
Dependent Variable	
Inter-Local Cooperation (ilrev)	Aggregate of revenue transfers between local governments as presented in 2010 estimates of the Census of Governments, State and Local Government Finances
Independent Variables	
Fragmentation Index (frag)	Number of local governments per 100,000 people. List of county governments within metropolitan areas obtained from 2010 metropolitan component counties of the census bureau. Local governments within each metropolitan area obtained from the Government Integrated Directory of the Census of Governments.
govdensity	Number of local governments per 100 square miles
Location (central) ⁶	Central or outlying, census bureau, SMSA and CBSA delineation files
GDP	GDP of metropolitan area for 2010 (in thousands of dollars) published by the Bureau of Economic Affairs
income	Per capita income: Selected Economic Characteristics, ACS 2010 , DP03
empgrowth	Employment by industry: ACS 2010, construction + retail trade+ wholesale trade + FIRE
emptech	Employment by industry: ACS 2010, information sector + professional and scientific sector
empmanu	Employment by industry: ACS 2010, manufacturing sector + warehouse + transportation sectors
empserv	Employment by industry: ACS 2010, education and health + other services + public administration
graduate	Percentage of population with graduate education, 2010 ACS, selected social characteristics, DP02
homeval	Median home value – 2010 ACS, GCT2510
fstress	Fiscal stress: ratio of total expenditure to total revenue. 2010 Census of Governments, state and local government finances
Race (black)	Percentage of population designated as “Black or African-American”, 2010 SF-1, P3
homogeneity	Absolute difference between percentage of Whites and Blacks in a locality
seniorpop	Percentage of Population 65 years and older, 2010 SF-1, QT-P2
poor	Families with HH income less than 50 percent of median HH income of the MSA
mclass	Families with HH income 50 percent to 150 percent of median HH income of the MSA
rich	Families with HH income more than 150 percent of median HH income
gini	Gini coefficient calculated from household income available in 2010 ACS, Selected Economic Characteristics, DP03
Control Variables	
Size (pop)	Total population as obtained from Census Summary Files SF-1, P1
agecity / agemsa	Median-year structure built, 2010 ACS, B25035
Type: city, county, township	Coded 1 for true and 0 for false. 2010 State and Local Government Finances
Regional Variation ne, mw, s, w	Regions coded 1 for true and 0 for false

Data Transformations

The data uses variables that have different spreads. Many of the variables also display considerable right skewedness. To standardize the spread of the data and to correct the skewedness in distribution, those variables have been transformed by taking their logarithms with base 10. A log transformation does not change the relationship between the variables but only makes the interpretation easier by minimizing skewedness and standardizing the spread of the data. Log transformation can only be used in the case of continuous variables. Logit transformation has been applied to the variables representing a fraction or ratio. The transformations work as shown in the following schemes:

Log transformation with base 10: $n \rightarrow \log_{10}(n)$

Logit transformation using $\log_{10}$ function: $p \rightarrow \log_{10} [p / (1 - p)]$

A list of variables transformed using logarithmic and logit methods are presented in Table 3.2. Other transformations used in the analysis are per capita conversions and percentages. Both transformations help to minimize spurious effects of population size on other variables. Conversion to per capita figures has been done using the population variable as the denominator. Percentage conversion transforms the spread of the data to a limited scale between 0 and 100, thus making comparisons easier.

Table 3.2

List of Transformed Variables

Variables	Histogram	Transformed Variables	Histogram
Interlocal Revenue		Log Interlocal Revenue
Population		Log Population
Per Capita Income		Log Per Capita Income
GMP		Log GMP
Home Value		Log Home Value
Household Income		Log Household Income
Senior pc		Logit Senior pc

Multivariate Models

This study uses Robust Linear Regression⁷ to identify causal relations between selected local characteristics and interlocal cooperation. Because the analysis uses information for three types of very differently sized localities – counties, cities, and towns, a great deal of variation in the data for different types of governments can be expected. Extreme numbers in this data are not outliers; they are good pieces of information. However, they also can bias causal models if they are weighed equally. Robust method minimizes the effects of extreme outliers while still keeping them in the analysis. An example of a generalized model employed in this study is as follows:

$$\text{Interlocal Cooperation} \sim (\text{fragmentation and proximity}) + (\text{economic characteristics}) + (\text{social characteristics}) + (\text{control variables})$$

This analysis seeks to build a parsimonious model including all research variables. In cases where variables show collinearity problems and were still required in the model to evaluate the hypothesis, new models have been created to study the impacts of collinear pairs separately.

This study also uses statistical diagnosis to test the suitability of regression models. It uses Pearson's bivariate correlations to identify unusual relationships between pairs of research variables. Possible multicollinearity problems are identified at this stage. Goodness of fit statistics (e.g. r-squared, adjusted r-squared, and model p-value) is reported for each model. T-statistics and p-values for coefficients are also calculated. Finally, model residuals are plotted against theoretical quantiles in a Q-Q plot to verify that residuals are normally distributed. A scatterplot of residuals and fitted values is also created for each model to determine whether they exhibit random relations.

CHAPTER IV

DATA PORTRAYAL AND ANALYSIS

This chapter provides the description of the data including the averages, dispersion, and range for each research variable. It is followed by a section examining the bivariate correlations between variables, which gives a preliminary idea about the hypothesized relations between research variables and also provides valuable information about levels of collinearity that exist between some of them. The chapter concludes with findings from the regression analysis. Finally, a tabular summary of results with special reference to the research hypotheses concludes the chapter.

Summary of the Data

This study uses two datasets—one with variables aggregated for Metropolitan Statistical Areas (MSAs) and another with variables measured at the local level. The first dataset includes 51 of the largest metropolitan areas in the U.S.A. per the 2010-census population data. The second dataset has information about 1165 localities contained within those 51 MSAs. Tables 4.1 and 4.2 summarize the variables aggregated for selected MSAs. Similarly, Tables 4.3 and 4.4 respectively present the frequency distribution and descriptive summary of the variables measured at the local level.

Table 4.1

Frequency Distribution of Binomial Variables at MSA Level

Variables	Frequency	Percent
MSAs in Northeast Region (NE)	8	15.7
MSAs in Midwest Region (MW)	10	19.6
MSAs in the South (S)	21	41.2
MSAs in the West (W)	12	23.5
N=51		

Table 4.2

Descriptive Statistics of Variables Measured at MSA Level

Variables	Min.	Max.	Average	Std. Dev.
Interlocal Revenue (\$,000)	5618	1162560	207441.8	258638.1
Interlocal Revenue Per Capita (\$)	4.63	321.91	65.73	60.02
Fragmentation Index	1.08	32.89	10.87	8.52
Local Governments	21	1356	295.8	279.23
Density of Governments	0.27	18.84	6.27	4.61
Total Population	1054323	18897109	3276223.82	3177753.58
Gross Metropolitan Product (\$,000)	44607	1280307	183129.6	207233.4
Median Household Income (\$)	46260	86290	56990	8788.59
Growth-Sector Employment (%)	23.11	34.83	29.56	2.60
Technology-Sector Employment (%)	10.56	23.97	14.34	2.75
Manufacturing-Sector Employment (%)	6.93	22.48	15.29	3.58
Service-Sector Employment (%)	21.51	38.8	30.82	3.44
Unemployed (%)	5.8	12.7	7.82	1.29
Population with Graduate Degree (%)	6.7	22.2	11.5	2.94
Median Home Value (\$)	113900	696200	245298.03	131858.18
Black or African-American (%)	1.51	45.67	15.23	9.47
White (%)	47.46	87.82	69.65	10.06
Homogeneity	2.25	80.48	54.42	16.67
Senior Population (%)	8.08	17.28	11.95	2.08
Poor (%)	14.7	26.69	20.9	3.11
Middle Class (%)	13.87	40.24	30.08	4.83
Rich (%)	36.65	62.43	49.01	6.75
Gini Coefficient	0.36	0.52	0.42	0.031
Age of the MSA (years)	16	57	35.6	10.4

N=51

Table 4.3

Frequency Distribution of Binomial Variables at Local Level

Variables	Frequency	Percent
Central Localities	1015	87.1
Outlying Localities	150	12.9
City	757	65.0
County	204	17.5
Township	204	17.5
NE	304	26.1
MW	430	36.9
S	270	23.2
W	161	13.8
N = 1,164		

Table 4.4

Descriptive Statistics of Variables Measured at Local level

Variables	Min.	Max.	Average	Std. Dev.
Interlocal Revenue (\$,000)	1	88226	4092.64	10177.93
Interlocal Revenue per capita (\$)	0.02	13853.88	78.31	439.47
Total Revenue (\$000)	491	5102000	200400	501688.6
I-L Revenue as Percent of Total	.001	63.42	4.07	7.37
I-L Revenue as Percent (City)	.001	63.42	4.54	8.07
I-L Revenue as Percent (Town)	.001	34.74	3.85	6.44
I-L Revenue as Percent (County)	.004	30.4	2.35	4.06
Total Population	219	1714773	113652.39	222865.82
Per Capita Income (\$)	11161	115334	32000.72	12216.65
Growth-Sector Employment (%)	11.75	63.31	29.62	4.12
Technology-Sector Employment (%)	1.2	39.8	14.04	4.72
Manufacturing-Sector Employment (%)	2.4	42.73	16.7	5.67
Service-Sector Employment (%)	12.98	55.57	30.5	5.24
Unemployed (%)	1.00	24.80	7.27	2.87
Fiscal Stress	0.108	9.79	1.00	0.326
Population with Graduate Degree (%)	0	48.69	12.47	8.34
Median Home Value (\$)	33600	1000000	271865.55	158245.73
Black or African-American (%)	0.17	93.97	11.01	15.48
White (%)	1.96	100	76.61	18.89
Homogeneity	0.01	98.73	69.0	24.48
Senior Population (%)	0.47	96.43	12.99	5.43
Poor (%)	1.76	66.6	25.3	11.4
Middle Class (%)	4.56	65.05	34.77	8.18
Rich (%)	6.62	90.1	39.94	15.23
Age of the Locality (years)	7.00	71.00	36.84	14.80

N = 1,164

As shown in Table 4.1, about 41 percent of the MSAs selected for this study are in the South, approximately 20 percent of them are in the West and the Midwest each, and about 16 percent are in the Northeast.

The extent of interlocal cooperation represented by the aggregated interlocal-revenue transfers among localities measured at the MSA level ranges from about \$4.63 to \$322 per person. On average, local governments in metropolitan areas generate about \$65 per person in interlocal revenue. Measured at the local government level, interlocal revenue per capita averages about \$78 per person. Similarly, interlocal-revenue transfers between selected localities range from two cents to almost \$13,900 per capita, with actual monetary amounts ranging from \$1,000 to around \$88 million. The standard deviation is about \$10 million or \$440 per capita. The data range, averages, and dispersion tell us that interlocal revenue is skewed to the right of the distribution. This suggests there are fewer localities with very high interlocal revenues compared to a large number with low to moderate revenue transfers. Additionally, city governments have slightly higher average interlocal revenue than townships and county governments. The average per capita interlocal revenue of city governments is \$4.54 compared to \$3.85 of townships and \$2.35 of county governments. Table 4.5 lists some of the localities and MSAs with the highest and lowest amounts of interlocal-revenue transfers.

Table 4.5

MSAs and Localities with Highest and Lowest Interlocal Revenue Transfers Per Capita

Highest		Lowest	
MSA	Locality	MSA	Locality
Memphis, TN	Industry City, CA	Hartford, CT	Piscataway Township, NJ
Rochester, NY	Fenton City, MO	Boston, MA	Jefferson County, WV
Buffalo, NY	Falls Church City, VA	Oklahoma City, OK	Gloucester Township, NJ
Las Vegas, NV	Des Peres City, MO	Pittsburgh, PA	Valparaiso Town, IN
Washington, DC	Mathews County, VA	Providence, RI	Shoreview City, MN

Average fragmentation index in the MSAs is about 11 local governments per 100,000 people. The range varies from approximately two governments to 33 government units for every 100,000 people. Pittsburgh, St. Louis, Denver, Kansas City (Mo.–Kan.), and Memphis (Tenn.–Miss.–Ark.) are the five most fragmented metropolitan regions in this dataset. Similarly, Las Vegas, Baltimore, Houston, Los Angeles, and Washington D.C. are the five least fragmented regions. The number of local governments including cities, counties, municipalities, townships, villages, and special districts range from 21 to 1,356 with an average of 295.8. Chicago, New York, St. Louis, Denver, and Pittsburgh have the most local governments by count. Urban regions with the least number of local governments are Las Vegas, New Orleans, Virginia Beach (Va.), Baltimore, and Raleigh (N.C.). Similarly, the range of density information reveals that localities are condensed to about 19 units within 10 square miles, to less than one unit

within that geography. The average density of governments is about six units per 100 square miles.

Of the 1,164 localities selected, 204 (17.5 percent) are county governments, 756 (65 percent) are city or municipality governments, and the remaining 204 (17.5 percent) are township governments. Of all the townships used in this study, 84 percent (172) are in the Northeast, and the remaining 32 are in the Midwest. Similarly, of 756 cities and municipalities, 101 (13 percent) are in the Northeast, 345 (45 percent) are in the Midwest, 173 (29 percent) from the South, and 137 (18 percent) are from the West. Of the selected localities 87 percent are located fully or partially in a central county.

Data related to the size of the localities has shown to be right-skewed as well. The smallest local government in the dataset has 219 people, and the largest has about 1.8 million people, with an average of around 113,000 and a standard deviation of 222,000 people.

Localities selected for this study also vary considerably in terms of their economic characteristics. With a minimum of \$44 million and a maximum of \$1.2 billion, the average Gross Domestic Product (GDP) of the metropolitan areas selected for this study is \$183 million, a metric that also seems to be right skewed. Another metric of economic vitality at the metropolitan level is median household income. It ranges from \$46,260 to \$86,290, an average of \$56,990, which is also has a distribution that is slightly skewed to the right. Per capita income measured at the local level is also similarly skewed to the right. It ranges from \$11,161 to \$115,334 with an average of \$32,000.

Among the four employment groups used in this study, most localities show higher average employment in the growth-sector and the service-sector, each group

making almost 30 percent of the total employment. Average employment in the manufacturing and the technology sectors are 14 percent and 16 percent respectively. The percentages are comparable when aggregated at the MSA level as well. The manufacturing sector and service sector show more variation across localities as compared to the growth and the technology sectors. Unemployment, however, has a very low dispersion of 2.87 percent and 1.29 percent measured at the local and MSA levels respectively. Average unemployment in the selected localities is about 7 percent.

Other measures of economic vitality used here are education and median home value. The percentage of population with graduate degrees measured at the local-government level ranges from 0 to 48.69. On an average, about 13 percent graduate-degree holders live in the selected localities. The skews in the data show that while a majority of localities have their percentage of graduate population near the average, very few of them have extremely high percentage of residents with higher education.

Median home value also has similar characteristics: an average of \$271,865.55, a minimum of \$33,600, and a maximum of \$1 million. The very fact that all these metrics of economic vitality have high variations and are skewed to the right suggests the possibility of considerable inequalities among localities within metropolitan areas.

This study uses various measures of inequalities. One of them is the Gini coefficient of income inequality. Comparing household income among census-designated income cohorts of population across the metropolitan region shows that the Gini coefficient varies from 0.36 to 0.52. A value near zero means perfect equality, whereas a value near 1 suggests perfect inequality.

Income inequality within localities has also been measured through categorization of population by income. On average, localities have about 25 percent of poor people. Some localities have poor populations as low as 1.76 percent and some as high as 66.6 percent. Comparing this to the numbers aggregated at the metropolitan scale shows that sharp differences between localities are dulled when measured at regional levels. The data shows that about 21 percent poor people reside in metropolitan regions with a minimum of 14.7 percent and a maximum of 26.69 percent.

Similarly, the average percentages of middle-class people and rich people in localities are about 35 percent and 40 percent respectively. The middle-class population varies from 4.56 percent to 62.05 percent, while rich varies from 6.62 percent to 90.1 percent respectively. Variations measured at the aggregate metropolitan scale are much lower than this. The middle-class population in MSAs ranges from about 14 percent to 40 percent, averaging 30 percent. Likewise, the percentage of rich people ranges from 36 to 62 averaging 49 percent measured at the MSA level. This probably suggests that while regions as a whole do not seem unequal, individual localities are highly segregated with respect to economic classes.

Fiscal stress, measured as a ratio between total expenditure of the locality and the total revenue of localities, ranges from 0.108 to 9.79 with an average of 1.0. The average suggests that the expenses of most localities are comparable to revenues. Minimum and maximum values suggest that localities spend 10 times less than what they earn while others spend almost 10 times more than their total revenue.

In terms of race, the selected localities have an average of 11 percent African-American population with a minimum of 0.17 percent and a maximum of almost 94

percent. Similarly, the average percentage of whites is 76.61, ranging from 1.96 percent to 100 percent. Southlake City in Tarrant County within the Dallas-Fort Worth metropolitan region has a 100 percent white population, whereas Robbins Village in Cook County in the Chicago-Joliet-Naperville metropolitan region has a 94 percent black population. Homogeneity, which has been calculated as the absolute difference in percentage between whites and African-Americans, ranges from 0.01 to 98.73 with an average value of 69.0. This suggests that the average difference between the percentage of whites and the blacks in the selected localities is 69 percent. The homogeneity scale ranges from 0 to 100, 0 being perfectly heterogeneous and 100 being perfectly homogenous.

The senior demographic in the locality averages around 13 percent with ranges from 0.47 to 96.43 percent. When aggregating at the metropolitan level, the percentage of the senior population ranges from 8 percent to about 17 percent with an average of about 12 percent. The distribution shows tremendous skewedness when measured at the local level.

The study uses age of the locality to control for the variations between older and newer localities. Age of the locality is measured through the median year of the built structure, which ranges from 7 years to 71 years. The average age of localities is around 37 years and the dispersion within the data is almost 15 years. The median metropolitan age averages 35.6 years with a minimum of 16 years and a maximum of 57 years.

In all respects, variables measured at the local level provide sharper contrast compared to those collected at the metropolitan level because the extreme values measured at the local level become diluted while aggregating and averaging at the MSA

level. Interaction among localities is the focus of this study. Most of the analysis is focused on comparing characteristics of the localities. However, local characteristics such as fragmentation and Gini are calculated using MSA data to measure variation among localities across the region.

Bivariate Correlations

This section examines Pearson's bivariate correlations between research variables, and this study uses bivariate correlations as a diagnostic tool. The primary focus is to understand preliminary relationships between variables intended to be used in multivariate regression. The very high correlation coefficient between pairs of variables suggests possibility of multicollinearity effects later in multivariate models. This information will be used to either completely remove some affected variables from regression models or stagger those pairs of variables in different models if they need to be used at all. Tables 4.6 and 4.7 present Pearson's correlation matrices for variables measured at MSA and local levels respectively.

In the table with variables representing MSA characteristics, the dependent variable—Intergovernmental Revenue (logged)—does not seem to have questionably higher correlations with any of the predictor variables. However, a few cautionary relationships among the variables are worth mentioning here. The Gross Domestic Product (GDP) of metropolitan areas is correlated with population. This means that metropolitan regions with a greater population have a higher GDP as well. This relationship is too obvious. To avoid spurious correlations further in the analysis, GDP has been transformed into GDP per capita by normalizing it with the population of

metropolitan areas. The Pearson's correlation coefficient between the (log of) GDP per capita with (log of) population is 0.22 after the transformation. This is shown in Table 4.9.

Pairs of variables like `emptechpc-hhincom`, `graduatepc-emptechpc`, `homogeneity-blackpc`, `gini-hhincome`, and `gini-graduatepc` have bivariate correlation coefficients upwards of 0.8. Naturally, the percentage of the graduate population correlates strongly with employment in the technical sector since most technical jobs require an educated and skilled workforce.

Homogeneity is calculated using the absolute difference between the white population and the African-American population. Both, white and black variables can be expected to highly correlate with homogeneity.

Similarly, in the dataset with variables representing characteristics of local governments, the percentage of the population with graduate degrees correlates with per capita income. This relationship is also obvious since higher education generally enables one to get better paying jobs.

These obvious correlations are duly noted and those variables are staggered in different regression models to avoid possible multicollinearity effects.

Table 4.6
Pearson's Correlation Matrix for Variables Measured at the MSA Level

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1 Log I-L Revenue	1																		
2 Fragmentation	-.2	1																	
3 Government Density	.11	.53	1																
4 Log Population	.66	-.23	.33	1															
5 Log GDP	.62	-.24	.34	.96	1														
6 Log HH Income	.31	-.28	.04	.37	.51	1													
7 Emp. Growth pc	-.29	.03	-.06	-.04	-.02	-.15	1												
8 Emp. Tech pc	.29	-.2	.01	.36	.51	.80	.00	1											
9 Emp. Manufacture pc	-.15	.40	.37	-.10	-.05	-.07	-.24	-.22	1										
10 Emp. Service pc	-.01	.15	.29	-.10	-.06	.21	-.20	.17	-.11	1									
11 Graduate pc	.21	-.08	.23	.23	.39	.82	-.27	.82	-.00	.51	1								
12 Home Value	.5	-.37	.04	.42	.5	.79	-.26	.62	-.12	-.00	.59	1							
13 Race Black pc	.04	-.05	-.08	-.07	-.06	-.23	-.05	-.15	-.05	.11	-.11	-.31	1						
14 Race White pc	-.48	.49	.27	-.34	-.38	-.40	.28	-.29	.21	.23	-.18	-.52	-.45	1					
15 Homogeneity	-.32	.32	.21	-.16	-.19	-.10	.20	-.08	.16	.07	-.04	-.13	-.84	.86	1				
16 Poor pc	.18	-.09	-.08	.16	.14	.04	-.01	-.02	.14	-.41	-.16	.07	.07	-.29	-.22	1			
17 Middle Class pc	-.15	.10	-.01	-.06	-.09	-.07	.34	-.12	-.02	.02	-.19	-.28	-.03	.35	.23	.41	1		
18 Rich pc	-.19	.26	.21	-.24	-.21	-.19	-.19	-.11	.17	.29	.09	-.14	.12	.15	.02	-.73	-.71	1	
19 Gini	.21	-.10	.18	.14	.28	.88	-.32	.68	.04	.43	.86	.67	-.23	-.19	.01	-.06	-.09	.01	1
20 Age MSA	.14	.26	.71	.14	.16	.07	-.42	-.06	.38	.53	.33	.16	-.09	.23	.19	-.24	-.18	.38	.35

Table 4.7
Pearson's Correlation Matrix for Variables Measured at Local Level

Variables	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1 Log I-L Revenue	1														
2 Log Population	.50	1													
3 Log Per capita Income	-.01	-.03	1												
4 Emp. Growth pc	-.01	-.03	.17	1											
5 Emp. Tech pc	.10	.09	.62	.39	1										
6 Emp. Manufacture pc	-.17	-.16	-.30	.16	-.23	1									
7 Emp. Service pc	-.01	-.06	.15	.38	.34	-.02	1								
8 Graduate pc	.03	-.00	.85	-.01	.62	-.43	.22	1							
9 Home Value	-.00	.08	.70	.16	.54	-.33	.08	.61	1						
10 Race Black pc	.15	.17	-.33	-.22	-.13	-.16	.03	-.17	-.26	1					
11 Race White pc	-.20	-.32	.32	.22	.01	.20	.04	.15	-.00	-.79	1				
12 Homogeneity	-.23	-.36	.29	.16	.00	.18	.03	.13	.05	-.67	.83	1			
13 Poor pc	-.05	-.17	.19	.14	.08	-.02	.33	.13	.03	-.11	.23	.20	1		
14 Middle Class pc	.07	.03	-.44	.07	-.05	.10	.17	-.34	-.25	.31	-.31	-.28	.19	1	
15 Rich pc	-.10	-.10	-.16	.44	.12	.30	.40	-.26	-.05	-.01	.02	.03	.26	.57	1
16 Age Locality	-.01	-.09	.01	-.12	.07	-.11	.26	.16	.04	.16	-.17	-.14	.29	.30	.12

Robust Coefficients of Regional Variables

This section examines the causal effects of the local characteristic on interlocal cooperation controlling for cumulative effects of other variables. Models 1 and 2 examine the effects of variables measured at the MSA level on aggregate interlocal revenue. Models 3, 4, and 5 examine similar correlations between the variables measured at the local-government level. The coefficients and relevant statistics for Models 1 and 2 are presented in Table 4.8.

Among all the variables used in Model 1, population and homogeneity generate coefficients significant at confidence interval of 99 percent. Government density and the binary variable representing localities in the South reach statistical significance at 95 percent confidence interval. Similarly, fragmentation, GDP per capita, median household income, and percent employment in the technology sector produce robust coefficients that are significant at 90 percent confidence interval. The Gini coefficient, which measures the income inequality within an MSA, cannot produce a statistically significant coefficient. The coefficient for the age of the MSA is also not significant statistically; however, it still needs to be retained in the model since it is one of the control variables.

The model has r-squared value of .637 and an adjusted r-squared value of .546. The value of r-squared suggests that the model is able to explain almost 64 percent of the variation caused by the included independent variables on interlocal cooperation. Adjusted r-squared has been calculated to control the inflation in r-squared caused by the inclusion of statistically insignificant but analytically relevant variables. The adjusted r-squared suggests that even if statistically insignificant variables are removed from the model, it can still explain the 54.6 percent variation in the dependent variable.

Table 4.8

Robust coefficients at MSA Level

Variables	Model 1	Model 2
Fragmentation	.012 (.231)*	.024 (.252)**
Gov. Density	-.058 (-.45)**	-.063 (-.404)*
Homogeneity	-.015 (-.50)***	x
South	-.577 (-.684)**	x
GMP Per Capita(log)	-.468 (-.763)*	x
HH Income (log)	-3.07 (-.659)*	-.255(-.059)
Emp. Tech. pc	.131 (.269)*	x
Gini	8.72 (.367)	x
White pc	x	-.015 (-.271)*
Age of MSA	-.004 (-.114)	.011 (.012)
Population (log)	2.49 (1.54)***	1.37 (.598)***
Intercept	25.34*	-.11*
r-squared	.637	.51
Adj r-squared	.546	.44

Notes:

DV = Interlocal Revenue Transfers (Log10)

p<.01***, .01<p<.05**, .05<p<.1*

() = values in parentheses are standardized coefficients

x = variables not included in this model

Figure 4.1

Regression Diagnostics for Model 1, Plots

Table-4.9

Regression Diagnostics for Model 1, Correlations

Variables	1	2	3	4	5	6	7	8	9	10
1 IL Rev (log)	1									
2 Pop (log)	.59	1								
3 Govt. density	-.01	.33	1							
4 Homogeneity	-.32	-.16	.21	1						
5 GDP per capita (log)	.00	.22	.16	-.17	1					
6 HH Income (log)	.22	.37	.04	-.10	.62	1				
7 Emp. Tech. pc	.23	.36	.01	-.08	.65	.80	1			
8 Gini	.10	.14	.18	.01	.55	.88	.68	1		
9 Age of MSA	-.01	.14	.71	.19	.12	.07	-.06	.35	1	
10 White pc	-.44	-.34	.27	.86	-.27	-.40	-.29	-.19	.23	1
11 Fragmentation	-.15	-.23	.53	.32	-.09	-.28	-.20	-.10	.26	.49

Population is the most influential variable in the model with a standardized beta coefficient of 1.54. This means that one unit change in population causes an increase in interlocal revenue by 1.54 times its standard deviation. Besides representing the size of metropolitan areas, population variable also works as a control variable in the model.

The second most influential variable is the per capita gross domestic product of the metropolitan area (GDP), which has a negative standardized beta coefficient of -.763. This suggests that a unit increase in per capita GMP causes a decrease in interlocal cooperation by a factor of .76 of its standard deviation.

Household income also shows a similar negative causal link with interlocal cooperation. The results suggest that increase in household income causes a decrease in interlocal revenue by almost 66 percent of its standard dispersion.

Similarly, increase in racial homogeneity by twice its standard deviation is found to decrease interlocal cooperation by one standard deviation. Government density also has a negative relationship with interlocal cooperation where increase in density by 1 percent of its standard deviation causes a decrease in interlocal revenue by half of its standard dispersion.

A second model is run using metropolitan data focused on prominent economic, racial, and fragmentation information from the first model. This model uses the percentage of white population instead of the homogeneity index to measure the effects of race in interlocal cooperation. This model attains a r-squared of .51. After adjustment for unresponsive variables, the model is still able to explain 44 percent of variations caused by the selected MSA characteristics on aggregate interlocal cooperation.

The coefficient for fragmentation index gets better in this model whereas median-household income loses its predictive power. Fragmentation is positively correlated with interlocal cooperation with an impact factor of almost 25 percent of its standard deviation.

Similarly, percent of white population shows a negative correlation with interlocal cooperation. As the percentage of white population increases by one standard deviation, there is a corresponding decrease in interlocal cooperation by a factor of .27 of its standard deviation. This relationship is statistically significant at 90 percent confidence interval.

The density of government has the same directional relationship and retains almost the same predictive power as in the first model. These findings partially support the arguments laid out in the first hypothesis of this study. Fragmentation produces significant positive coefficients as hypothesized, but the proximity variable shows a directional relationship different than what was expected. These relationships will be discussed in the next chapter.

Economic variables are found to behave in accordance with the expected relationships. Gross metropolitan product and household income both produce negative coefficients and substantially higher beta coefficients. This is consistent with the hypothesis related to economic distress and how it forces localities to cooperate. Employment in the technological sector, however, produces statistically significant positive coefficient. This reflects localities' attempt to reap joint benefits in information and technology sectors.

Finally, the binary variable representing metropolitan areas in the South produces a significantly strong negative coefficient suggesting that these MSAs are less likely to engage in interlocal cooperation compared to their counterparts in the Northeast, Midwest and the West. This is hardly a surprise as the result is quite consistent with Elazar's categorization of regions where the South is generally considered to have a traditionalistic political culture and to be more conservative (Elazar, 1972).

Regression models and the coefficients are sufficiently reliable. A number of diagnostic tests are carried out to verify the significance of the coefficients. Figure 4.1 shows plots between standardized residuals and robust distances. It shows the presence of some outliers in the data. These outliers are real data points with real significance in the research and not data errors. This is why robust methods are employed to keep them in the analysis while preventing them from skewing the correlations. The normal q-q plot has also been generated, and it shows that the residuals are generally distributed normally, implying that the model satisfies the normality assumption of linear regression. In addition, the plot between the residuals and fitted values show a random relationship, which implies that no internal biases exist between the research variables, which further adds to the robustness of the model. A correlation matrix between variables included in the first model is presented in Table 4.11, which shows the absence of collinearity among the model variables.

Robust Coefficients of Local Variables

Models 3, 4, and 5 compare various characteristics of localities against the variable representing interlocal cooperation. Table 4.10 lists model statistics including

robust coefficients, standardized robust coefficients, significances, and the goodness of fit. Model 3 is the base model for variables measured at the local level. It includes most of the statistically significant research variables along with the control variables. Models 4 and 5 stagger potentially spurious variables in Model 3 and help to further clarify the relationships. Figure 4.3 presents diagnostic plots, and Table 4.11 presents the correlation matrix of the variables included in Model 3.

Model 3 shows relationship between socioeconomic, political, and geographic characteristics and interlocal cooperation. Most of the included variables produce statistically significant robust coefficients. Variables such as population, home value, middle class, income, and poverty produce coefficients at 99 percent confidence interval. Employment in the growth sector produces coefficients at 95 percent confidence interval, whereas rich, senior population and employment in manufacturing sector produce coefficients significant at 90 percent confidence interval. The variable representing localities in the South slightly misses the significance bracket, whereas the variable representing age of the city is not significant at all. The model converges with an r-squared of .34 and an adjusted r-squared of .33. This suggests that the predictors used in the model are able to explain 34 percent of variance in the dependent variable. Even after correcting for the effects of insignificant variables in the model, it explains 33 percent of the variance.

Table 4.10

Robust Coefficients at Local Level

Variables	Model 3	Model 4	Model 5
Population (log)	.878 (.572)***	.787 (.486)***	.808 (.497)***
Per Capita Income (log)	1.58 (.25)***	1.47 (.199)***	1.00 (.148)**
Middle Class pc	-.04 (-.194)***	x	x
Home Value (log)	-.293 (-.179)***	-.29 (-.158)***	-.223 (-.127)***
Poor pc	.029 (.158)***	x	.015 (.053)*
City	.32 (.156)***	x	x
Rich pc	-.026 (-.072)*	-.017 (-.081)*	x
Emp. Manu pc	-.02 (-.07)*	x	x
Senior pc (logit)	.168 (.068)*	x	x
Emp. Growth pc	.026 (.002)**	x	x
Age of City	-.001(-.02)	x	x
South	-.033 (-.023)	x	x
Graduate pc	x	x	.01 (.10)
White pc	x	-.003 (-.03)*	x
Black pc	x	x	.002 (.007)
Intercept	-4.20**	-3.33**	-2.78**
r-squared	.342	.285	.284
Adj. r-squared	.335	.281	.281

Notes:

DV = Interlocal Revenue Transfers (Log10)

p<.01***, .01<p<.05**, .05<p<.1*

() = values in parentheses are standardized coefficients

x = variables not included in this model

Figure 4.2

Regression Diagnostics for Model 2, Plots

Table 4.11

Regression Diagnostics for Model 2, Correlations

Variables	1	2	3	4	5	6	7	8	9	10	11	12
1 I-L Rev (log)	1											
2 Pop (log)	.50	1										
3 Homeval (log)	-.00	.081	1									
4 MClass pc	-.10	-.1	-.05	1								
5 Income (log)	-.00	-.03	.7	-.16	1							
6 Poor pc	.07	-.07	-.25	.57	-.44	1						
7 Emp. Growth pc	-.01	-.03	.16	.44	.17	.07	1					
8 Rich pc	-.05	-.07	.48	-.13	.79	-.34	.27	1				
9 Senior pc (logit)	-.05	-.17	.03	.26	.19	.19	.14	.23	1			
10 Emp. Manu pc	-.17	-.16	-.33	.30	-.3	.1	.16	-.08	-.02	1		
11 Age of City	-.01	-.09	.04	.12	.01	.3	-.12	-.07	.29	-.11	1	
12 White pc	-.20	-.32	-.009	.02	.32	-.31	.22	.37	.26	.20	-.17	1
13 Black pc	.15	.17	-.26	-.01	-.33	.31	-.22	-.33	-.12	-.16	.16	-.79

As with Models 1 and 2, this model also reports local economic characteristic as one of the strongest predictors of interlocal cooperation. The standardized beta coefficient for per capita income in Model 3 is .25, which means that an increase of one standard deviation in per capita income can cause a corresponding increase in interlocal revenue by nearly a quarter of its standard deviation.

Percentage of middle-class population is another variable that produces strong beta coefficients. One standard deviation increase in the percentage of middle-class population corresponds to a decrease in interlocal revenue by nearly 20 percent of its standard deviation.

Home value is the fourth most influential variable in the model, and it also has negative correlation with interlocal revenue. One percent increase in home value within a locality corresponds to nearly .18 percent decrease in its interlocal revenue.

The percentage of poor people in a locality is positively correlated with interlocal cooperation. A unit increase in the percentage of poor people corresponds to almost .15 percent increase in interlocal revenue. Percentage of rich people, on the other hand, correlates negatively with interlocal cooperation. A 100 percent increase in rich population corresponds to only 7.2-percent-point decrease in interlocal revenue. The relationship is statistically significant at 90 percent confidence interval.

Employment in manufacturing sector is also negatively correlated with interlocal cooperation. Its influence factor is negative 7 percent. Employment in growth sector, on the other hand, correlates positively with interlocal cooperation, and the relationship is also very significant statistically. However, the influence factor of this variable is just about .02 percent.

Similarly, an increase in the percentage of the senior population in a locality corresponds to an increase in interlocal cooperation. As percentage of senior population increases by one standard deviation, interlocal revenue increases by nearly 7 percent of its standard deviation.

Even though type of local government has just been used as a control variable, it produces a statistically significant coefficient that is worth mentioning. Compared to localities designated as county or township, a city or a municipality has 15 percent more probability of engaging in interlocal cooperation.

Models 4 and 5 more closely examine the relationship of social characteristics with interlocal cooperation. Suspecting possible collinearity between income classes and racial groups, these two models stagger those variables and compare the results with the base model. Population, per capita income, and average home value are variables that produce the strongest coefficients in Model 3. These three variables are retained in Models 4 and 5 as well. Economic classes correlate with one another, hence they cannot be analyzed together in the same model. Model 4 evaluates the correlation between the percentage of rich people on interlocal cooperation, while Model 5 examines the same relationship using percentage of poor people. Similarly, the variable representing the percentage of white population is used in Model 4 whereas black percentage is used in Model 5. Both models attain coefficients of determination (r-squared) of 0.28 suggesting that the independent variables used in both models are able to explain more than 28 percent of the variation in interlocal cooperation.

Per capita income and median home value produce coefficients that are statistically significant at 99 percent confidence interval in Model 4. Per capita income is

positively correlated with interlocal cooperation with an influence factor of nearly 20 percent. However, median home value is negatively correlated with interlocal cooperation. One unit increase in median home value causes interlocal cooperation to decrease by almost 15 percent of its standard deviation.

Likewise, percentage of rich people and percentage of white population produce coefficients significant at 90 percent confidence interval. Both variables are negatively correlated with interlocal cooperation. One standard deviation increase in the percentage of rich people causes a corresponding decrease in interlocal revenue by about 8 percent of its standard deviation. Percentage of white population similarly causes a negative 3 percent change in interlocal cooperation. The effects caused by percentage of rich people and the percentage of white people on interlocal cooperation are small but are statistically significant.

The coefficient for median home value reaches statistical significance at 99 percent confidence interval in Model 5. Per capita income attains a significance at 95 percent confidence interval, and the percentage of poor people produces coefficient at 90 percent confidence interval. The coefficients produced by percentage of graduate population and the percentage of black population do not attain statistical significance. As per capita income increases by one standard deviation, it causes interlocal revenue to increase by nearly 15 percent of its standard deviation. As with the previous two models, increase in median home value causes interlocal revenue to decrease, and the influence factor is about 12 percent of its standard dispersion. The increase in the percentage of poor people in the jurisdiction, however, causes interlocal revenue to increase by a factor of 5 percent.

The base model satisfies the conditions of linear regression. Plot of standardized residuals and robust distances show a number of outliers in the dataset. Robust coefficients are hardly influenced by the presence of outliers. The q-q plot of residuals versus theoretical values presented in Figure 4.3 shows a nearly perfect normal distribution of the residuals. Another plot showing the relationship between the residuals and fitted values tells that they are fairly independent and random. These diagnostics show that the regression model satisfies all assumptions and is better able to predict the relationship between independent variables and the dependent variable. Additionally, the correlation matrix of model variables presented in Table 4.11 demonstrates the absence of collinearity between variables.

Summary of Results

Table 4.12 presents the summary of findings from the quantitative analysis. The table lays out all variables used in robust models and their hypothesized relationship with the variable representing interlocal cooperation. The table also lists standardized beta coefficients of all variables, their direction of association, and statistical significances. The last column in the table indicates whether the hypothesized directions of relationships are substantiated by the analysis. The following chapter is dedicated to the discussion of the relationships between variables used in this research.

Table 4.12

Summary of Standardized Coefficients at MSA and Local Level

Variables	Expected Relationship	Observed Relationship				
		Interlocal Revenue				Outcome as Expected
		Local		MSA		
		beta	Sig.	beta	Sig.	
Fragmentation	+ve	-	-	.252	**	Y
Government Density	+ve	-	-	-.45	**	N
GMP	-ve	-	-	-.763	*	Y
Per Capita Income	-ve	.25	***	-	-	N
Household Income	-ve	-	-	-.659	*	Y
Emp. in Growth Sector	-ve	.002	**	-	-	N
Emp. in Tech Sector	-ve	-	-	.269	*	N
Emp. in Manufacture Sector	-ve	-.07	*	-	-	Y
Home Value	-ve	-.179	***	-	-	Y
Homogeneity	+ve	-	-	-.5	***	N
Senior Population	+ve	.068	*	-	-	Y
White percent	-ve	-.03	*	-.271	*	Y
Poor	+ve	.158	***	-	-	Y
Middle Class	+ve	-.194	***	-	-	N
Rich	-ve	-.072	*	-	-	Y
Gini	-ve			.367	-	N
Size (Population)	-ve	.572	***	1.54	***	-
Age of City/MSA	-	-.02	-	-.114	-	-
City	-	.156	***	-	-	-
South	-	-.023	-	-.684	**	-

CHAPTER V

DISCUSSION

This chapter revisits theories and hypotheses laid out in Chapters II and III in light of the findings from data analysis. Table 4.12 presented at the end of the previous chapter summarizes the relationships between local characteristics and interlocal cooperation. This chapter analyzes those results and puts them in the context of the hypotheses laid out for this study.

The dependent variable—local intergovernmental cooperation—is measured using information on interlocal monetary transfers. The study considers any form of interlocal transfer of funds to be the measure of cooperation among localities. The extent of interlocal revenue of localities depends on various urban services and infrastructure sold to their neighbors, funds received as payments on joint ventures, and funds received as fulfillment of a tax-sharing covenant that exists between them. The descriptive summary of the data shows that on average localities receive approximately \$80 per capita in interlocal revenue. About 4 percent of total revenue of localities comes from intergovernmental transfers. Some localities receive as little as .001 percent while others receive as much as 63 percent of their revenue from other local governments. Among the three types of general-purpose local governments analyzed in this study, cities and

municipalities report the highest percentage of interlocal revenue, followed by townships, and then by counties.

Fragmentation and Interlocal Cooperation

Metropolitan fragmentation is the foundation of variation across urban regions. Fragmentation is an outcome of lifestyle choices made by the population. Consolidationists often tout fragmentation as an insurmountable hurdle against regional collective action and suggest that dissolving political boundaries is the best way to address inequalities (Aron, 1969; Peirce, Johnson, & Hall, 1993; Rusk, 1993, 1999, 2003; Wood, 1961). This manuscript considers metropolitan fragmentation as an opportunity rather than a problem. On one hand, it serves the purpose of creating choices for people—thus enhancing local democracy, and on the other hand, it increases the potential for regional collective action by increasing the number of participants. Results obtained from the analysis fully support this hypothesis. Analysis of data at the regional level reveals strong causal link between fragmentation and interlocal cooperation.

Fragmentation creates localities with diversity of demand for public services and the ability of residents to pay for those services. With the presence of a multitude of service producers and providers in the region, localities can easily cooperate with those that have similar preferences for the type and quality of public services and are willing to jointly reap the benefits of scale economy.

The literature also claims that fragmentation enables rich people to prevent the poor from getting access to richer and better-served localities by implementing discriminatory land-use policies to minimize an unwanted burden on the infrastructure

and to keep taxes low (Downs, 1994; Ledebur & Barnes, 1992). Fragmentation has also been suggested to be an outcome of peoples' choice for racially homogenous communities (Burns, 1994). Fragmentation is considered to be the result of urban residents voting with their feet in favor of better-served communities (Tiebout, 1956), which connotes a constant state of competition among neighboring localities. On the grounds of these theories, preferences for racial segregation and economic competitiveness do not seem to support interlocal cooperation. However, the fact that fragmentation is still strongly correlated with interlocal cooperation after controlling for the effects of income and race suggests that other centripetal forces are stronger than the centrifugal push created by racial and economic segregation. It suggests that benefits accrued through the economies of scale in service production and through sharing risks by engaging in joint ventures far outweigh the costs of competitive behavior among fragmented localities. The results of this study also support the findings of Johnson and Neiman (2004) in which they conduct a survey of the managers of local governments and find that localities do cooperate with their neighbors whom they consider to be their competitors.

The relationship between regional fragmentation and interlocal cooperation reported by this manuscript is different from the findings presented by Post (2002). This study does not support her claim that fragmentation negatively influences interlocal cooperation. The primary reason can be attributed to the methods used in measurement of interlocal cooperation. She uses event-count of interlocal monetary transfers as her dependent variable whereas this study measures the magnitude of interlocal revenue transfers. Counting of interlocal transfers deflates the extent of interlocal cooperation,

which could be one reason for the difference between Post's (2002) findings and the findings of this study.

The outcome of this research regarding the relationship between fragmentation and interlocal cooperation also contradicts the findings of Olberding (2002b) and Hawkins (2010). They report fragmentation to be negatively correlated with partnership for economic development. The differences in findings may be attributed to the differences in measurement of the dependent variable. Both operationalize interlocal cooperation in the form of a dichotomous variable, that has shortcomings already discussed.

By utilizing an appropriate measurement for the extent of interlocal cooperation among localities, this analysis strongly supports the hypothesis that metropolitan fragmentation helps to enhance interlocal cooperation among localities. The null hypothesis that fragmentation does not affect interlocal cooperation is therefore rejected.

Geographic Proximity and Interlocal Cooperation

Based on Axelrod's (1984) theory of cooperation, this study expected to find a higher magnitude of cooperation among localities that are geographically nearer one another. However, the findings from the data do not support this hypothesis. In this study, geographic proximity is operationalized as density of governments measured in terms of the number of local governments within 100 square miles. The robust coefficients between proximity and interlocal cooperation are negative and are statistically significant. This suggests that an increase in the number of governments per unit area decreases interlocal cooperation. This finding does not confirm the expected relationship

between the two variables. Hence, the null hypothesis that geographically proximate localities do not engage in more interlocal cooperation is accepted.

City centers are areas where local government densities can be expected to be higher. Suburbs are by nature sprawled and occupy large geographic areas, thereby having lower government densities. Area-wide public authorities and special districts typically take up public-service delivery as well as economic-development responsibilities in central areas. In the areas where public authorities control land-use decisions and special districts provide public services, general purpose local governments do not need to engage in direct cooperation with one another. This could explain the anomaly in findings of this study regarding proximity and interlocal cooperation. However, any claim regarding the effects of special governments on cooperative activities between general-purpose local governments is out of the scope of this study. Further analysis will be needed to evaluate this theory.

The expected relationship of the geographic proximity of local governments and the extent of interlocal cooperation among them could not be substantiated from the data. The null hypothesis that geographic proximity among local governments does not influence interlocal cooperation is therefore accepted.

Economic Condition and Interlocal Cooperation

Gross domestic product per capita, median household income, per capita income, employment, property value, and the index of fiscal distress are variables used to measure economic performance of localities.

Gross domestic product per capita is the measure of overall economic performance of metropolitan region. This study finds that regional economy negatively influences interlocal cooperation. As the GDP per capita of a region increases, the aggregate transfer of interlocal revenue among the localities in the region decreases. Conversely, decrease in regional economic performance enables more cooperation among localities. This suggests that localities are affected by the economic condition of the metropolitan region, and the distressed ones respond by purchasing as much urban services from their neighbors as possible, rather than trying to produce their own. The findings suggest that localities resort to cooperative measures when they collectively face economic distress. This also substantiates the theory proposed by Savitch et al. (1993) that local economies are connected to the regional economy.

Just as GDP per capita measures economic strength of the metropolitan region, per capita income of localities represents economic vitality at local level. Increase in local per capita income is found to strongly correlate with increase in interlocal revenue. This implies that as localities become economically stronger, they develop increased capacity to produce and export urban services. It is possible that localities with thriving economy produce and sell urban services to their less affluent neighbors. However, this argument cannot be fully substantiated until the demand side of this relationship is evaluated by examining information regarding intergovernmental expenditure of the neighboring localities.

Employment is another measure of economic vitality used in the study. Increase in employment opportunities is a sign of a growing economy. This research expected to find a negative correlation between employment and interlocal cooperation. Apparently,

different employment sectors influence interlocal cooperation differently. Percentage employment in growth- and technology-sectors report positive correlations with interlocal cooperation, whereas percentage employment in manufacturing-sector reports a negative correlation. These variables produce significant coefficients even when controlled for spurious effects by including them all in the same analytical model. Percentage employment in the service sector does not produce significant coefficients in any of the models.

Growth-sectors such as construction, finance, insurance, real estate, and technology-sectors such as information services, telecommunication, research, and development are generally considered developmental activities. The transaction-cost theory suggests that localities engage in cooperation when it is cheaper to do so (Williamson, 1979). This study finds that localities cooperate with one another for collective growth in developmental sector. It is perhaps more beneficial for localities to cooperate in economic development than to engage in unnecessary competition that undermines their regional and global competitiveness. This finding contradicts Peterson's (1981) theory about interlocal relationship where he suggests that engagement in developmental activities by localities is generally a sign of interlocal competition.

However, employment in manufacturing-sector is negatively correlated with interlocal cooperation. Manufacturing-sector claims only about 15 percent of jobs in the localities selected for this study while they have nearly 45 percent jobs in the technology sector and the growth sector combined. The transition of cities from a manufacturing-based economy to a service- and information-based economy between 1970 and 2000 was primarily caused by a reduction in the number of manufacturing jobs. Scholars have

reported that urban industrial jobs either moved out of the urban economic region or altogether moved to a different country in search of cheap land and labor (Downs, 1994; Ledebur & Barnes, 1992; Nivola, 1999). Localities that have not transitioned to a service economy and that continue to depend on manufacturing establishments to enhance their local economy may still follow the Petersonian logic of interlocal competition. That explains the negative correlation between employment in the manufacturing sector and interlocal cooperation.

Household income is found to have a strong negative correlation with interlocal cooperation. A 1 percent increase in household income corresponds to a 0.6 percent decrease in interlocal revenue. Household income is different from per capita income in the way it measures actual family earnings from wages and benefits. *Per capita income* is the total earning of an economic region divided by total population and consequently does not necessarily represent families' real disposable income. Per capita GDP and income represent the aggregate economic production of the selected unit of analysis whereas household income is an indicator of the standard of living. A higher disposable income allows families to spend more on lifestyle amenities and services. Families with higher disposable incomes are expected to vote with their feet in search of better lifestyle services according to the Tieboutian model. The finding of this study suggests that families with more disposable income do not support the idea of their government cooperating with neighboring localities, which is consistent with the public-choice theory and its underlying assumption that localities avoid cooperation in the issues of lifestyle amenities.

Property value is another measure of lifestyle choice. Localities with better lifestyle amenities generally have higher property values, which also serve as a proxy for fiscal vitality of the local government since higher property values in the locality bring higher tax revenues to the local government. Property value is found to be negatively correlated with interlocal cooperation, suggesting that localities endowed with nicer properties and consequently higher local revenues are reluctant to engage in cooperation with their neighbors. Conversely, it suggests that localities that experience lower property values and consequently lower tax revenue engage in interlocal cooperation.

Low household income and lower property value are both signs of a distressed economy. Lower property value translates into lower revenue from taxes. Similarly, lower disposable income of families translates into subsistence retail activities and low levels of lifestyle retail expenditures. Such localities have fewer luxury establishments such as outlet malls, fine dining, health clubs, and entertainment centers and they generate less revenue. Their residents have increased demands for public infrastructure and other social-benefit programs. Residents also face a higher tax burden, but the localities experience a lower tax-yield. Miller (1995) describes this situation as fiscal stress. It is hypothesized that localities facing economic and fiscal stress are more likely to cooperate with their neighbors. The negative correlation between interlocal cooperation and these distress variables substantiate the hypothesized relationship. This result is consistent with that of Morgan and Hirlinger (1991) and Leroux and Carr (2007).

In light of the findings that localities cooperate more when faced with economic distress such as lower gross domestic product, lower property values, and lower

household income of the residents, the second hypothesis of this research that says economic distress forces localities to seek cooperative measures, is accepted.

Race and Interlocal Cooperation

This study analyses the effects of race and income inequality of localities on interlocal cooperation. Besides representing racial makeup by measuring the percentage of white population and the percentage of African-American population, this study also measures the homogeneity of localities in terms of absolute difference between the percentages of the two races.

The coefficients from the regression analysis using data collected at the metropolitan level suggests that interlocal cooperation decreases with increasing racial homogeneity. That is to say that the interlocal cooperation between localities within metropolitan areas increases if the metropolitan region is more heterogeneous. Results from Model 2 substantiate the finding that interlocal cooperation decreases with increase in the percentage of whites measured at metropolitan level. One standard deviation increase in percentage of white population corresponds to decrease in interlocal revenue by a factor of 0.27 of its standard deviation. This study expected to find a positive correlation between metropolitan racial homogeneity and regionally aggregated measure of interlocal cooperation based on the theory that racially homogenous localities can easily cooperate as they share similar preferences. The findings do not concur with the expected output.

Consistent with the findings at metropolitan level, coefficient of racial homogeneity measured at the local level also correlates negatively with interlocal

cooperation. Increase in percentage of white people corresponds with decrease in interlocal revenue of localities. Whites are conventionally considered rich compared to blacks. It is necessary to control for the spurious effect of income on the relationship between race and interlocal cooperation. Therefore, the variable representing the percentage rich population is included in Model 4 to isolate the effect of race alone on cooperation. Similarly, since the black or African-American population is conventionally considered to be poor, the variable representing the percentage of poor people is included in Model 5 to control for the spurious effect of poverty. Despite robust controls, measure of percentage of whites is found to negatively correlate with interlocal cooperation, whereas percentage of blacks fails to produce statistically significant coefficient. This finding does not support the hypothesis of racial homophily and concludes that white people are reluctant to engage in local cooperation irrespective of neighboring localities' racial makeup.

Income Inequality and Interlocal Cooperation

Income inequality is another social characteristic evaluated in this study. Just as is racial segregation, economic segregation is an outcome of metropolitan fragmentation. Localities have a disproportionate distribution of wealth. It has been hypothesized that increasing inequality between the rich and poor decreases interlocal cooperation. This study uses two metrics to measure the extent of income inequality within metropolitan regions: the Gini index and the percentage of population in different income classes.

Gini represents the spread of wealth between the localities within the metropolitan region. The analysis shows that the robust coefficient between the Gini index and

interlocal cooperation is not statistically significant. Gini coefficient of the metropolitan areas selected for this study has standard deviation of 0.03. Considering that the value of Gini coefficient ranges from 0 to 1, the data shows small dispersion of 3 percent. This suggests that the 51 largest metropolitan regions analyzed here have nearly similar index of income-inequality, which is why Gini index is not able to produce significant coefficients.

However, variables measuring economic heterogeneity at the local government level represent sufficiently large sample size, have wider distribution, and produce significant robust coefficients. The study finds that increase in the percentage of rich people is negatively correlated while percentage of poor people is positively correlated with interlocal cooperation. Models 4 and 5 evaluate these variables separately and they still produce equally strong coefficients. These findings support the hypothesis that heterogeneity in income negatively affects interlocal cooperation. The results imply that poor people prefer cooperative methods of urban service delivery whereas rich people do not. Therefore, in an urban region where neighboring localities have heterogeneous income classes the condition of reciprocity needed for interlocal cooperation cannot be achieved.

Size and Interlocal Cooperation

A locality's population size has been found to be one of the best predictors of interlocal cooperation. In each of the models, the population variable produces statistically significant coefficients. Coefficients of population in all but one model show that when population increases by one standard deviation, the variable representing

interlocal cooperation increases by almost half of its standard deviation. Localities with larger populations have bigger markets for public services. Local governments of larger jurisdictions need to invest more in public-service provision than their smaller counterparts. However, with increasing population it is easier to lower per-unit costs because of the economies of scale. The bivariate correlation between per capita interlocal revenue and population shows a negative relationship that suggests that per capita interlocal transfer decreases with increase in population. Hence, service provision becomes less expensive for large localities when they cooperate with their neighbors.

However, this study chose to use population as a control variable rather than a predictor. As the dependent variable is measured in terms of interlocal revenue, localities with higher populations naturally have more demand for public services, and therefore more interlocal revenue. Thus, size can have severe endogenous problems if interpreted as a predictor variable.

Senior Population and Interlocal Cooperation

This study uses percentage of senior population to control for age variations between localities. This demographic group is conventionally found to actively participate in town-hall meetings and has also reported the highest turnout in elections. Senior population is found to have a statistically significant positive correlation with interlocal cooperation. One standard-deviation increase in percentage of senior population causes interlocal revenue to increase by about 0.7 percent of its standard deviation. The magnitude of this relationship is not very strong, but it does tell a good deal about the direction of the relationship. Senior demographic are comparatively less

mobile in terms of their place of residence, they have limited sources of income, and they want to ensure uninterrupted services at the lowest possible cost in their chosen jurisdiction. Lower per capita cost for urban services is possible when economies of scale are achieved through cooperation.

Age of the Economy and Interlocal Cooperation

Age of the economy is another control variable in this study. Older cities tend to have more public infrastructure than their newer counterparts. The aging infrastructures of older cities have higher maintenance costs. Conversely, new localities have modern infrastructures and require less investment in maintenance and upkeep than older localities. It seems logical to assume that newer localities are better off cooperating with those that are older to provide urban infrastructure because it is cost effective to share than to produce it solely. However, this study does not provide conclusive a result about this issue. Age of the economy, which has been measured as the median age of built structures in a locality, fails to produce a significant coefficient in any of the models.

CHAPTER VI

CONCLUSION

The need for local cooperation itself alludes to the existence of a large number of jurisdictions that enjoy their share of power of self-governance. The U.S.A. is founded on the principle of pluralism, and the culture of jurisdictional sovereignty that set its roots centuries ago during the era of independence still resonates in modern day politics, both state and local.

American urban culture is predominantly polycentric. However, preference for autonomous urban governments has led to further fragmentation and demographic segregation. Sorting in terms of income and race has created a patchwork of localities with different levels of competitiveness. Competition among localities for mobile businesses and residents by attempting to lure them with credit-laden infrastructure and insurmountable economic benefits puts all of them in a downward spiral. Scholars have suggested consolidating smaller jurisdictions into one giant regional unit to end spillovers and correct the negative effects of policy differences. Some metropolitan areas have even embarked upon this experiment.

The question of success or failure of consolidation still triggers engaging discussions among urban scholars but the issue remains inconclusive to date. Besides the uncertainty of its efficacy, consolidation is considered one of the most difficult methods for regional governance. The easiest path to regional governance is through voluntary ad

hoc cooperation among localities. This is a system of random, temporary networks created on the basis of their specific needs and preferences. However, not all localities are found to engage in cooperation equally. The formation of cooperative networks is influenced by their political preferences, economic capacity, social structure, and geographical limitations.

Why Do Some Localities Cooperate More Than Others?

This research is a pursuit of identification of local characteristics that influence interlocal cooperation. It strives to find credible answer to why some localities cooperate more than others. This study uses robust methods designed to overcome the statistical limitations of previous studies done to identify local characteristics that influence interlocal cooperation. Using an aggregate data including more than two dozen variables measuring local characteristics of 1,164 localities within 51 largest metropolitan regions, this is one of the most comprehensive studies in its category.

The study finds substantial evidence that political fragmentation of metropolitan regions has a positive effect on cooperation among localities. It finds conclusive proof that economic distress causes localities to seek partners for mutual cooperation. It also concludes that racial homogeneity and economic inequality decreases interlocal cooperation.

Urban fragmentation is considered the cause of numerous urban problems. Concentration of the rich and poor in different urban pockets translates into fiscal disparities between the localities, which affect the capacities of those localities to produce and provide public services. Although some scholars favor consolidation of localities into

area-wide regional governments to solve the problems associated with fragmentation, it requires relinquishing the power of self-governance by the localities, which makes it an unpopular choice. Localities can reap the benefits of regional governance by voluntarily engaging into cooperative relations with their neighbors without giving up their right to self-governance.

Metropolitan fragmentation plays a dual role of segregating urban population into multiple and characteristically diverse local jurisdictions, while simultaneously creating multitude of localities that can engage in cooperative governance. This study finds credible evidence that the centripetal forces of cooperation are stronger than centrifugal forces of segregation and competition. Robust quantitative analysis produces results suggesting a positive role of metropolitan fragmentation in formation of cooperative networks among localities. The finding favors the concept of regional governance in absence of regional government. It also provides evidence that fragmented localities create local public economies through random voluntary cooperative networks as theorized by Parks and Oakerson's (1989).

Interlocal cooperation is, however, selective rather than holistic. This study finds that localities cooperate with their neighbors on the issues of growth and economic development but not on issues that involve land use policies, desegregation, and income redistribution. The skepticism expressed by Norris (2001) about selective cooperation among localities is found to be valid. Localities easily cooperate on issues of common interests and not on those involving competitive individual benefits. They are found to contribute towards strengthening regional economy when they collectively face economic distress, but not on policies that would ensure revenue redistribution and standardization

of urban amenities. This is a strong indication that economic growth has regional footprint to which the economies of individual localities are tied, as suggested by Savitch et al. (1993).

While this research does not separately analyze cooperation related to systems-maintenance and lifestyle services, it uses measures of local characteristics, some of which represent lifestyle choices of residents. Property value is a proxy for the residents' lifestyle choices as it translates into local revenue and better urban infrastructure. The finding that localities with higher property values engage in less interlocal cooperation is a strong indication that lifestyle amenities are not on the bargaining table.

Local economic development has been conventionally seen as a competitive policy arena. Localities have been theorized to engage in aggressive developmental activities through which they attract residents and businesses to achieve a competitive edge against their neighbors. According to Peterson (1981) increased developmental activities in metropolitan-regions signify higher levels of competition among localities. The findings of this study show benefits of scale-economies and shared risks on investments accrued through interlocal cooperation outweigh smaller gains from competitive economic development. In contrast with Peterson's (1981) hypothesis, localities with thriving technology- and growth-sectors are found to engage in interlocal cooperation for economic development.

Racial makeup and wealth distribution across metropolitan regions influence how localities interact with one another. Localities with majority white population have been found to disapprove of interlocal cooperation, whereas African Americans have been found to be indifferent toward it. Since, suburbanization is considered an outcome of

white flight from the city centers, white antipathy towards interlocal cooperation is hardly a surprise. However, theories claiming aversion of the African-Americans toward interlocal cooperation based on fear of political dilution needs a closer evaluation. Such an aversion probably exists against local government consolidations but not against voluntary cooperation where local autonomy is not threatened. Rather than racial prejudices, poverty among minority population influences interlocal cooperation. Higher percentage of poor people has been found to positively influence interlocal cooperation whereas higher percentage of rich people is found not to.

Implications for Academic Research

This comprehensive study has far reaching implications in the fields of urban politics, metropolitan governance, interlocal relations, and local economic development. It plays an important role in validating relationships posited by its predecessors and identifying new ones.

Literature on urban political economy and urban governance generally link metropolitan fragmentation with jurisdictional competition, negative externalities, and socio-economic inequity. Regional consolidation of local political powers is generally prescribed as magical remedy to those problems. This study strives to move focus from structural reform of urban governments to non structural solutions based on voluntary networks. Findings from this research highlight a new aspect of metropolitan fragmentation—its role in increasing possibilities for cooperative networks among urban localities—, which is a less explored avenue in scholarly research thus far.

This study further extends the argument to cooperation among localities in developmental-sector. Prevailing urban theories and a majority of scholarly works consider that urban localities compete with one another for economic resources. The city-limits theory even argues that localities in fragmented urban regions have no alternative to zero-sum competition. This study not only provides ample evidence of local cooperation in developmental activities, it initiates scholarly discussion about how cities transform from competitors to cooperators as their economy transitioned from manufacturing to information-technology and services.

Selective cooperation among urban localities is another key implication to be drawn from the findings of this analysis. Although, research hypotheses are only focused on the effects of economic distress on interlocal cooperation, the study generates findings that have far-reaching significance. Localities cooperate in various policy sectors, most common of which is urban utilities such as water supply, sewage treatment, snow removal, solid waste management and the like that are commonly referred to as systems-management services (Williams, 1967). Cooperation on production of such services accrue benefits due to economy of scale. Localities find it difficult to cooperate in lifestyle services such as urban parks, recreational facilities, security and policing, and the like because common consumption of those services create free-rider problem. Cooperation in developmental activities such as construction and maintenance of city roads, public transit, ports, airports, sports arenas, convention centers, and the like is dependent on the need for and the financial capacity of individual localities. Even though this study does not differentiate between various arenas for cooperation, the findings of this research help initiate further scholarly discussion on the topic.

Limitations of This Study

Just as with any quantitative study based on a large database, the results produced by this study can be confidently generalized. However, comprehensiveness sometimes blurs low-level details, and this research is not an exception to that risk. Other methodological issues such as sample type, measurement of variables, and data sources are some of the limitations of this study.

Findings of this study are based on analysis of large aggregate data. Data aggregation may inflate or deflate the influence of a variable, especially when the data is not normally distributed. A randomly selected pair of localities might not show the same magnitude and direction of relationships as predicted by the generalized model. It would require a pair-wise analysis of select individual localities to evaluate individual characteristics. This research can serve as a starting point for scholars interested in conducting such pairwise studies.

This research uses information about localities within 51 largest metropolitan areas. This selection method removes mid-sized metropolitan areas and small micropolitan areas from the analysis. In the case of some variables such as Gini coefficient, limiting the study to only 51 metropolitan areas has failed to produce sufficient variation, thus reducing the chances of getting significant robust coefficients.

Avenues for Further Research

This manuscript uses a substantially large dataset to study the influence of local characteristics on interlocal cooperation so that the findings can be generalized. In an aggregate analysis such as this one, it is challenging to operationalize the dependent

variable that captures all types of interlocal cooperation. Future research should avoid some of the following methodological limitations associated with this study.

Measuring non-monetary cooperation

This study uses interlocal revenue transfer as the dependent variable that measures the extent of cooperative activities between local governments that involve monetary exchange. However, local governments also engage in cooperation that does not require exchange of funds. Cooperative activities between neighboring localities such as implementation of similar land use policies and adoption of uniform tax rates are not reflected in monetary transfer between them. Similarly, if localities provide different services of comparable monetary value across each other's jurisdictions, they engage in cooperation without having to exchange money. Cooperative activities that do not involve monetary transfer are not included in this analysis. Cooperation that does not require monetary transfer seems much easier to materialize since it does not necessitate fiscal commitments. Future research using a more appropriate measure for the dependent variable can provide better insight on non-monetary cooperation between localities.

Interlocal expenditure as a measure of cooperation

The use of interlocal revenue as the dependent variable also limits this research to only those localities that report receiving money from other local governments. When a locality provides urban services to neighboring localities, it receives payments in the form of revenue. A locality that is totally dependent upon its neighbors for urban services does not report any interlocal revenue. Its cooperative engagements with its neighbors are

recorded as interlocal expenditure. Similar research using interlocal expenditure as the dependent variable will complement the findings of this study.

Public Authorities and Special Districts as institutions for indirect cooperation

This study measures cooperation between general-purpose governments. However, a majority of urban services are provided by special districts and public authorities. Many local governments are delegating their service production and even provision responsibilities on these semi-public institutions. Such institutions are more active in the metropolitan centers where local governments are in close proximity with each other. Role of public authorities and special districts in cooperative urban governance is not evaluated in this study. Future research can be focused on measuring the extent of the public services provided by the general-purpose governments and compare that to those provided by the special purpose governments. Considering that the special purpose governments have multi-jurisdictional operating boundaries, they make it possible for localities to engage indirectly into collective action. This is the least studied topic in metropolitan governance and carries immense potential for research.

ENDNOTES

¹ 2012 American Community Survey 5-year estimates

² Definition obtained from the Census Bureau's official web portal
http://www.census.gov/govs/go/municipal_township_govs.html

³ Post (2002) uses number of governments per square mile as a measure. I chose to use number per 100 square miles as it gives a sense of a mediocre size region. The strength and direction of relationship is not affected using either index.

⁴ <https://www.census.gov/hhes/www/poverty/poverty-cal-in-ac.pdf>

If a family's total income is less than the dollar value of the appropriate threshold, then that family and every individual in it are considered to be in poverty. Similarly, if an unrelated individual's total income is less than the appropriate threshold, then that individual is considered to be in poverty. Poverty thresholds do not vary geographically. They are updated annually to allow for changes in the cost of living (inflation factor) using the Consumer Price Index (CPI).

⁵ A Gini coefficient for analysis between localities within MSAs has been calculated using the number of households that fall within census-designated income categories. All households within a particular income cohort are assumed to be earning the median-dollar value of their respective income range. This calculation method was developed by Angus Deaton (Deaton, 1997), which can be summarized by following expression:

$$G = \frac{N+1}{N-1} - \frac{2}{N(N-1)u} (\sum_{i=1}^n P_i X_i)$$

Where, u is the average income of population, P_i is the income rank P of household i , with income X . The richest household (with highest median dollar value) receives a rank of 1 and the poorest a rank of N . A Gini coefficient comparing inequalities between MSAs has been calculated using the same expression shown previously with the only difference being the use of per capita personal income for each MSA to calculate the index.

⁵ The rationale goes back to Alfred Marshall's economics and well beyond. These principles state that the clustering of functions makes industry more productive, efficient and innovative. Infrastructure investment is necessary for clustering. Also, supply-side economics lends its weight to infrastructure investment because it increases profits and furthers incentives for industry. This, in turn, leads to more economic development (Marshall, 1920, Porter, 1995 and Glaeser, 2011).

⁶ The Census Bureau defines the *central counties* as those containing all or a substantial portion of the urbanized area. These counties are used when measuring commuting patterns with other counties that qualify as *outlying counties*. Municipalities, cities, and towns that are completely or partially (majority of the area) in central counties are considered central cities, or central towns, and those in outlying counties are considered accordingly.

⁷ The analysis uses *robustbase* package in R statistical software. Technical documentation for this package can be found in the following link:

<http://cran.r-project.org/web/packages/robustbase/robustbase.pdf>

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CURRICULUM VITAE

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CAREER OBJECTIVE

Pursue excellence in academic teaching, research, and innovation in the field of Urban and Regional Studies.

PROFESSIONAL APPOINTMENTS

Graduate Research Assistant, Urban Design Studio, University of Louisville (2015)

Instructor, Department of Political Science, University of Louisville (2013, 2014)

Graduate Fellow, Urban Studies Institute, University of Louisville (2011 - 2014)

Research Assistant, School of Urban and Public Affairs, University of Louisville (2010 – 2011; 2013 - present)

Senior Lecturer, Tribhuvan University, Kathmandu Engineering College (2006 – 2008)

Adjunct Professor, Tribhuvan University, Institute of Engineering (2007-2008)

Research Associate, National Planning Commission, Nepal (2007)

Research Associate; Multi-Disciplinary Consultants, Nepal (2007)

Research Associate, Information Dissemination Initiatives (IDI) Ltd. Kathmandu (2006 – 2007)

Lecturer, Tribhuvan University, Kathmandu Engineering College (2003-2006)

Project Architect, Creative Circle Consultants (P) Ltd, Kathmandu (2002-2003)

Project Architect, NeoPraxis Consults (P) Ltd, Kathmandu (2004-2007)

Head Creative, Axis Design Consultants (P) Ltd., Kathmandu (2007-2010)

EDUCATION

Doctor of Philosophy, Urban and Public Affairs, University of Louisville, April 2015

Dissertation: “Community Characteristics Associated with Local Intergovernmental Cooperation”

Advisor: Prof. Hank Savitch

Masters of Science, Urban Planning, Tribhuvan University, January 2006
Thesis: “Alternatives for Financing of Urban Infrastructure”
Advisor: Dr. Jibgar Joshi

Bachelor of Architecture, Indian Institute of Technology Roorkee (IITR), November 2002

PUBLICATIONS and MANUSCRIPTS

Kelly, J. M., & Adhikari, S. (2013). Indicators of Financial Condition in Pre- and Post-Merger Louisville. *Journal of Urban Affairs*, 35(5), 553-567. doi: 10.1111/j.1467-9906.2012.00645.x

Savitch, H.V., & Adhikari, S. “Fragmented Regionalism: Why Metropolitan America Continues to Splinter”. *Urban Affairs Review*, (under review).

Adhikari, S. “Regionalism and Economic Disparity: Does Inter-Jurisdictional Cooperation affect Residential Income Inequality within Urban Regions?”, *working paper*.

Adhikari, S. “Autonomy, interdependence, and cooperation – a recipe for regional economic growth”, *working paper*.

Dissertation, M.Sc. (2006), “Alternatives for Financing of Urban Infrastructure: A Case of Nepal”.

PRESENTATIONS and LECTURES

Paper presentation: “Transcending Local Boundaries: Local Characteristics associated with Inter-Jurisdictional Cooperation”. The Urban Affairs Association 44th Annual Conference, San Antonio, Texas, March 19-22, 2014.

Paper presentation: “Fragmented Regionalism: Why Metropolitan America Continues to Splinter” (with Dr. Hank Savitch). The Urban Affairs Association 43rd Annual Conference, San Francisco, California, April 3-6, 2013.

Invited presentation: “Economic Impact of the Proposed Evansville City – Vanderburgh County Consolidation”, Evansville City Council, January 10, 2013.

Paper presentation: “Financial Condition in Pre-and Post-Merger Louisville” (with Dr. Janet Kelly). The Urban Affairs Association 42nd Annual Conference, Pittsburgh, Pennsylvania, April 18-21, 2012.

Invited lecture: “Financial Condition in Pre-and Post-Merger Louisville, UPA Speaker Series, University of Louisville, May 2012

Paper presentation: *Prospects and Constrains on High Rise Development in Kathmandu Valley*. Nepal Engineers’ Association 7th Annual National Convention of Engineers, Kathmandu, Nepal, April 12-14, 2007.

RESEARCH INTERESTS

- Urban and regional governance
- Urban planning and development
- Urban political economy
- New regionalism

- Organizational theory
- Decision theory
- Multi agent simulation and artificial societies
- Policy analysis and evaluation
- Applied Econometrics

TEACHING INTERESTS

- Regional governance
- Regional planning
- State and Local Government
- Advanced Research Methods
- Statistics
- Urban political economy
- Comparative urban development
- Planning theory
- Policy analysis and program evaluation
- GIS and Spatial Statistics

RESEARCH EXPERIENCE

Doctoral Research; Community Characteristics Associated with Local Intergovernmental Cooperation (2012-2015)

Independent Research; Fragmented Regionalism: Why Metropolitan America Continues to Splinter (with Dr. Hank Savitch), 2011 – 2013

Research Paper; Financial Condition in Pre- and Post-Merger Louisville (with Dr. Janet Kelly), 2012

Research Report; Water Demand Forecasting in Uncertain Times: Isolating the Effects of the Great Recession (In Progress)

Research Report; Identification of Quality of Place measures for Louisville and its peer cities (2014)

Research Report; Identification of peer cities comparable to Louisville with respect to demographic, economic, social, and cultural indices (2013)

Grant Proposal; State Revenue Sharing Alternatives for Louisville and Kentucky's Urban Centers (2011)

Research Report; Metropolitan Profiling for State of Metropolitan Housing Report (2011)

Website / Media Product; Louisville Metro Dashboard (2012 /13) – An interactive web interface developed for Louisville Metro that enabled users to browse through a time series information on different demographic and economic variables.

Website / Media Product; Louisville Economic Monitor (In Progress)- A web interface that tracks economic and demographic data for Louisville Metro being developed for users to conduct real time data manipulation and basic data analysis.

Research Report; Guidelines for a Three-Year Interim Development Plan, a project funded by UNDP-Nepal (2007)

Research Report; Prospects and Constrains for High- Rise Development in Kathmandu Valley (2007)

Research Report; Physical Development Plan of Chame small town accommodating for a 10 year forecast of economic and demographic changes (2006 - 2007)

Research Report; Environmental Impact Assessment and Local Area Plan of Barahakshetra historic region in eastern Nepal (2006 – 2007)

TEACHING EXPERIENCE

Instructor:

State and Local Government; Department of Political Science, University of Louisville; Fall 2014.

Topics in Urban Planning and Policy; Department of Political Science, University of Louisville; Fall 2013.

Adjunct Professor:

Introduction to GIS; Department of Architecture and Urban Planning, Tribhuvan University, Spring 2007.

Statistics for Urban Planners; Department of Architecture and Urban Planning, Tribhuvan University; Spring 2007.

Senior Lecturer:

Urban Planning Theory; Department of Architecture, Kathmandu Engineering College; Fall 2007.

Housing and Community Development; Department of Architecture, Kathmandu Engineering College; Fall 2006 and 2007.

Planning Studio; Department of Architecture, Kathmandu Engineering College; Spring 2006 and 2007.

History of Modern Architecture; Department of Architecture, Kathmandu Engineering College; Spring 2006 and 2007

Lecturer:

Computer Aided Design; Department of Architecture, Kathmandu Engineering College, Fall 2003, 2004, and 2005.

Design Studio; Department of Architecture, Kathmandu Engineering College, Spring 2004 and Fall 2005.

GRANTS, AWARDS, and SCHOLARSHIPS

Research project, Louisville Metro Dashboard, 2013-2014, \$41,437.00

Research report, Competitive City Report – Identification of Louisville’s peer cities, 2013, \$20,000

Research report, Local Option Sales Tax Incidence Analysis, Louisville Metro Government, 2013, \$25,174

Graduate Assistantship (tuition and stipend), Department of Urban and Public Affairs, University of Louisville, 2010 – 2014, \$153,344.00

Outstanding Faculty Award, Kathmandu Engineering College, May 2008.

TCS Colombo Plan Academic Fellowship, International Center for Cultural Relations, Government of India, 1997- 2002, \$5,000.00

Tuborg Excellence Award, for securing 7th position in nationwide academic ranking of high school students, Nepal, 1993, \$250.00

SERVICE EXPERIENCE

Member, Search Committee; Assistant Professor at the Department of Urban and Public Affairs, University of Louisville, 2014

Member, Search Committee; Assistant Professor and Director of Kentucky State Data Center, University of Louisville, 2014

Member, Selection Committee for filling a Research Manager position at the Kentucky State Data Center, 2012, 2013

Member, Selection Committee for filling a Research Assistant position at the Urban Studies Institute, 2013

Team leader, website design for the Urban Studies Institute, Univ. of Louisville; *usi.louisville.edu*, 2012

Team leader, website design for the Kentucky State Data Center, *ksdc.louisville.edu*, 2012

Team leader, website design and maintenance of the Economic Dashboard of Louisville Metro, *metrodashboard.usi.louisville.edu*, 2013 –2014

Treasurer, Ph.D. Students' Association, Department of Urban and Public Affairs, University of Louisville, 2011 – 2012

Project Architect / Founding Director, Axis Design Consultants (P) Ltd., Nepal, 2007 – 2010

Editor, *Development Insight (Vol.5)*, a quarterly development journal published by Information Dissemination Initiatives (IDI), Nepal, 2007.

Organizer, SAARCH Annual Conference 2002 on the theme *Heritage Conservation and Tourism in SAARC Countries*, Kathmandu, October 3-4, 2002.

Unit Secretary, National Association of Students of Architecture (NASA), IIT Roorkee Chapter, 1999.

TECHNICAL SKILLS and TRAINING

Statistics Packages: R 3.0.2, SPSS 22 and Amos, Excel 2010, Access 2010

Spatial Mapping, Modeling, and Spatial Statistics: ArcGIS 10.0 / 10.1

Economic Forecasting: IMPLAN 3.1

Web Design: Dreamweaver 12.0, Joomla 2.5

Computer Graphics: AutoCAD 2014, 3DS MAX 2014, SketchUp 6.0, Adobe Photoshop, Adobe InDesign.