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THE INFLUENCE OF ACTOR ATTRIBUTES AND SOCIAL RELATIONS ON GAME TRANSITION: FORMAL MODEL AND EMPIRICAL ANALYSIS OF COLLECTIVE ACTION AND COLLABORATIVE ECONOMIC DEVELOPMENT POLICY

By

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To my parents,
Kee Bok Lee
Young Lan Kim

and my sister,
Hye Won Lee

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During physics class in my junior high school years, I learned about the three elements of force: application point, direction, and magnitude. Later, I came to realize that this lesson resembles some components of success, or at least some of the important aspects of our lives in many ways. The strong support of my family, the guidance from a superior mentor group in my graduate years, and my commitment largely assisted by the great collegiality are equally important keys to the completion of this dissertation. Although pursuing a doctoral degree is nowhere near the success that I can possibly achieve in my life, it is definitely the equilibrium of many up-and-downs and frustrating moments. At the same time, the fact that I have always been blessed to be surrounded by good people has enabled me to overcome these difficulties and even convert the most disappointing moments into great opportunities. To express my gratitude to these important people is the smallest thing I can do as I am completing this dissertation.

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ABSTRACT

Local economic development policy is often described as a competitive environment in which local jurisdictions compete with each other for creating jobs and increasing the tax base. This implies that each jurisdiction's motivation to pursue its own well-being, with interactions of the competitive environments, prevents multiple jurisdictions from achieving desirable common goals, as the typical prisoners' dilemma suggests. However, interjurisdictional competition is only a part of the story and the prisoners' dilemma game describes merely one type of social situations in which individual motivations conflict with socially desirable outcomes among many possible variations.

In fact, there has been considerable success in many alternative approaches to address regional problems through targeted collaborative efforts including intergovernmental agreements (Post 2002; Andrew 2006; Shrestha 2008), creation of special districts (McCabe 2000; 2004) and regional partnerships among local governments in a metropolitan area (Olberding 2002, Feiock, Steinacker, and Park 2009). This suggests that there could be numerous underlying mechanisms including institutional arrangements that make cooperation a more attractive strategy by lowering payoffs resulting from defection or increasing payoffs for cooperation, which ultimately leads to local jurisdictions playing an assurance game.

One of the main puzzles to scholars in the field of urban studies and public policy is that the fragmentation of jurisdictional authorities in metropolitan areas creates a self-organizing community to address intergovernmental problems such as economies of scale, negative externalities, urban sprawl, income inequality, environmental impact, and so on. The purpose of this dissertation is to examine how and to what extent those mechanisms affect the emergence of self-organizing interlocal collaboration to address regional economic development by focusing on the nature of collective action, contextual aspects of regional problems, and network relationships of local jurisdictions.

This study investigates both the Institutional Collective Action (ICA) framework and social network theory to understand how the nature of collective action, contextual aspects of regional problems, and the embedded network relationship of local jurisdictions help or deter the creation of regional governance mechanisms. By focusing on regional partnerships for economic

development in US metropolitan areas, this study examines the role of economic demand, transaction costs, and tightly-clustered and information-bridging network structures of metropolitan areas in building up multilateral voluntary regional organizations for economic development activities.

In order to provide a complete discussion about the underlying mechanisms of regional collaboration and achieve the potential inferential value from a closer integration of rigorous theorizing and empiricism, this study employs both analytic formal modeling and empirical statistical testing in its methodological approach in its two stages of research design: first, a formal model of regional partnership formation has been developed to investigate how the nature and composition of participants in a collective situation affects the likelihood of partnership formation. Based purely on game theoretic motivation-- a rational calculation of the benefits and costs of collaboration-- this formal model examines the effect of group size, degree of decision fragmentation, and benefits/costs structure on regional collaboration. The second stage has shed more light on deriving statistical inferences on how contextual and relational factors, along with the nature of collective action in the first stage, affect regional partnership formation.

The results suggest the evidence of distinctive roles for all three groups of variables identified in this dissertation: the nature of collective action, contextual aspects of regional problems, and network relationships of local jurisdictions.

First, the nature of collective action demonstrates that the uncertainty around collective action comes from group size (the number of participants), the degree of decision fragmentation, and benefits/costs structure. The degree of decision fragmentation shows a non-linear relationship with regional partnership formation suggesting that voluntary regional development partnership is more likely to emerge in cases 1) where there is a local jurisdiction which has a better position to attract an additional member to build a minimal provision coalition, and 2) when the decision making power of local governments is relatively equally diffused. This further implies that there is always a tension between the motivation of individual local jurisdictions to overcome collective action dilemmas by counting on the role of dominant or leading actors and their intentions to exercise a maximum level of autonomy and control in their economic development decision. Therefore, overall configurations of regional partnership heavily depend upon the level of uncertainty and the extent to which local jurisdictions attempt to retain their local autonomy.

Second, the results demonstrate that some contextual factors, especially the transaction costs caused by community heterogeneity, deter regional partnership from being formed. Especially, the results show that race dissimilarity, along with its positive interaction with income dissimilarity, is negatively associated with regional partnership formation. This suggests that 1) race dissimilarity across local jurisdictions generally decreases the chance of regional collaboration being established, and 2) race dissimilarity is more problematic when it is isolated than when it is combined with median income dissimilarity.

Third, two aspects of the relational network factor are found to be influential on increasing the likelihood of regional collaboration. The results demonstrate that both previous experience in regional collaboration for economic development and repeated interactions with each other over voluntary service agreements increase the adoption of metropolitan collaboration by providing mechanisms that mitigate credible commitment problems. This suggests that tightly-clustered network structures are more likely to enhance the willingness of a local jurisdiction to cooperate with others for regional economic development. On the other hand, the results also indicate that the probabilities of regional partnership being established grow as the number of civic organizations per capita increases. Since regional partnerships are often formed and maintained with the assistance of non-profit and for-profit organizations whose interests are to promote the economy of local jurisdictions and communities, then access to their information and resources is critical to exploring a broader set of possible gains by being connected to coordinators and unexploited partners. The entrepreneurial role of nonprofit organizations in regional economic development is to redirect useful resources and information, which can coordinate each player's decision and its consequence. Therefore, information-bridging network structures with possible interactions with non-governmental organizations allow local governments to maximize the advantage of innovation, which would not be possible without these entrepreneurial actors.

CHAPTER 1
INTRODUCTION

1.1 Emergence of Regional Organizations as Regional Economic Development Strategies

In many regions of the United States, local governments have established organizations and alliances that take a regional approach to policy formation and implementation in order to promote their regional economic development for a couple of decades. One approach, regional partnership, has gained popularity by coordinating the activities for regional economic development among fragmented authorities. This regional approach contradicts the traditional description of local jurisdictions competing with one another for residents, business, and jobs (Olberding 2002; Peterson 1981; Tiebout 1956). In this sense, both "public choice" and "interjurisdictional competition" theories have recognized the difficulty in formulating and maintaining voluntary collaboration among a large number of local governments without a central authority. However, there has been "experimentation with an incredible array of regional problem-solving processes, not just in a few regions, but in all regions, nationally" (Dodge 1990; p 355). This suggests that local governments have begun to realize the benefits from many alternative approaches to address regional problems through targeted collaborative efforts, which leads to improvement of regional well-being.

Whereas these collaborative regional governance strategies can be successfully employed only when competitive perceptions and motivations are overcome (Gordon 2007), it is also true that there is a great amount of pressure for local jurisdictions to attempt to be less isolated from various types of potential collaborative activities among neighboring jurisdictions. Many local government officials interviewed at various informal meetings have revealed that they are concerned about not being as connected to this movement as they are involved in the tedious and uncertain world of discussion of potential regional collaboration.

For example, the Tallahassee/Leon County Economic Development Council is the outcome of joint efforts of the City of Tallahassee, Leon County government, Tallahassee/Leon County Planning Department, the City of Tallahassee Economic Development Department, Tallahassee Regional Airport, Blueprint 2000, Downtown Improvement Authority, and other non-profits organizations and even for- profit firms in order to address regional problems and

formulate the dominant unit for global competition. The activities of this organization serving four counties in the Tallahassee metropolitan area cover regional advertising/marketing/ promotions, site selection assistance to prospective firms, development of applications for federal/state grants or incentive funds, establishment of joint projects such as enterprise zones, sponsorship of workforce development or job training programs, and development of strategic plans for regional economic development. One government official in a member county reports that this regional partnership organization includes all local jurisdictions in the metropolitan area as its members, which leads to a great amount of time and effort to coordinate their diverse and sometimes conflicting interests, yet brings substantial returns once their conflicting interests are well managed and collaboration turns out to be successful. One approach this collaborative effort counts on to overcome coordination problems and resolve conflicting interests is to utilize another regional organization which previously existed as its base to expand its memberships and functions.

In fact, the creation of a regional partnership for economic development is not a unique phenomenon in the Tallahassee metropolitan area. The Metro Orlando Economic Development Commission in the Orlando metropolitan area and the Tampa Bay Partnership in the Tampa Bay-St. Petersburg-Clearwater metropoltian area are also joint efforts from most of the local jurisdictions in the areas to promote regional economic development by being responsible for similar functions and activities. On the other hand, regional partnership is not a ubiquitous phenomenon in that a regional partnership for economic development is neither automatically nor mandatorily formulated/implemented in every metropolitan area in the US metropolitan area. As of 2007, only 58% of US metropolitan areas have one or more regional partnership organizations to promote their regional economy. In other words, the formation of regional partnerships is not always successful since their voluntary nature creates a sufficiently large variation in both formation and performance (Lee and Park 2007). This observation raises a general research question in this dissertation: *Why only some metropolitan areas have success in establishing regional partnerships for economic development?*

While many other related issues such as the maintenance and performance of regional partnerships are important as well, this study focus on how fragmented and polycentric decision making systems overcome collective action situations and achieve common goals without the intervention of central authorities. Therefore, the purpose of this dissertation is to basically

investigate under what conditions a metropolitan area can successfully form and maintain a regional partnership by focusing particularly on the underlying dynamics regarding the emergence of a regional governance mechanism. And this same question may be extended to identify the circumstances under which other voluntary multilateral governance mechanisms and, more generally, various regional governance alternatives can be successfully established and sustained among fragmented authorities in US metropolitan areas.

1.2 Collective Action and Collaborative Economic Development Policy

The collective action problem in public policy defines circumstances under which a self-organizing community can be successfully formed and maintained. Since self-interested participants seek the political or economic benefits of being a free-rider, many attempts at collective action are doomed to fail. This type of social dilemma has been portrayed in game theory context as the prisoners' dilemma. A simple illustration of the prisoners' dilemma implies that selfish individual behavior and its interactions prevent participants from creating a desirable public good. In this regard, Olson (1965) argues that rational self-interested individuals will not act to achieve their common or group interests. The motivation to be a free-rider is even stronger in large-size groups where enforcing agreements through social pressure is less plausible.

State and local economic development policy is often used as an example of the prisoners' dilemma. Economic development in a fragmented metropolitan system is typically characterized as a competitive environment in which local jurisdictions compete with each other for jobs and growth by utilizing tax, spending, zoning, and other regulatory provisions as incentives to induce specific firms to locate or remain in their jurisdiction as opposed to locating in another city (Feiock 2002; Aylward 2005).

However, the existence of positive and negative intergovernmental externalities from growth creates a need for more integrated solutions to address issues such as economies of scale, urban sprawl, income inequality, environmental impact, and so on. Collaborative efforts provide a way to confront this dilemma and address the externalities. In fact, there has been considerable success on this front through targeted collective efforts such as intergovernmental agreements (Post 2002), creation of special districts (McCabe 2000; 2004) and regional partnerships among local governments in a metropolitan area (Olberding 2002, Feiock, Steinacker, and Park 2009).

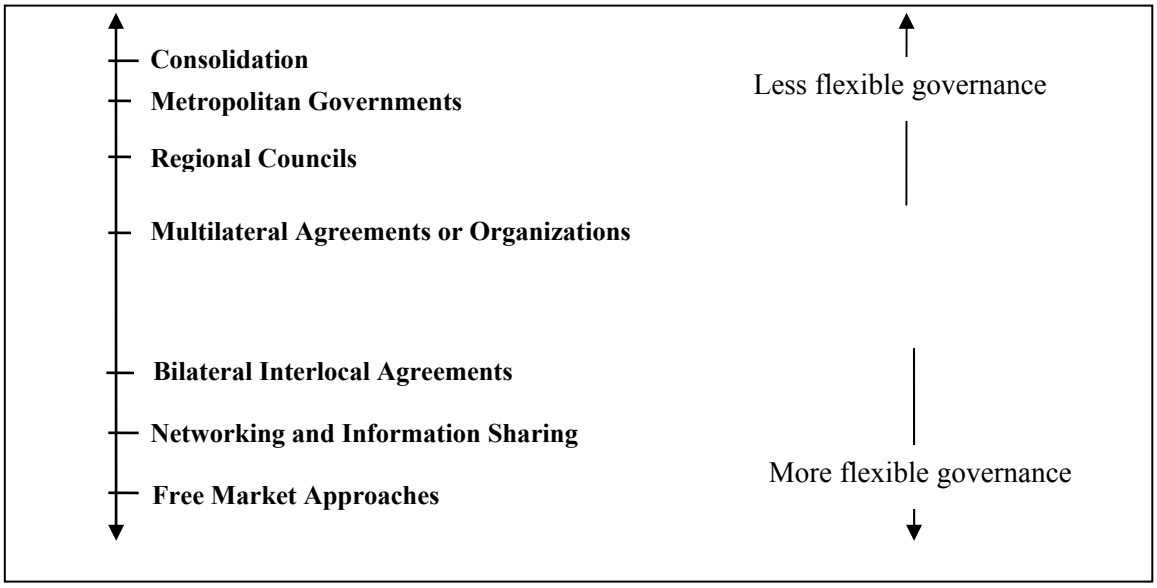
These phenomena imply that in complex local public economies numerous voluntary associations of local governments and officials as well as citizen associations that transcend local boundaries are possible (Oakerson 1999).

1.2.1 Regional Governance

How can we explain the observation that a fragmented system of local entities can create many types of voluntary self-organizing institutions that operate as if they were a single integrated system? One way to answer this question is to view metropolitan governance as an "institutional arrangement (Ostrom 1990)." Institutional arrangements are, in fact, outcomes of interactions among many entities and, at the same time, they essentially provide rules that govern interactions of local jurisdictions within a metropolitan area for the production and provision of collective goods. In this sense, metropolitan governance is a mechanism that directs local efforts to solve the puzzle across jurisdictional boundaries in the best way by altering existing institutional arrangements or creating new ones. However, the institutional mechanisms developed to foster regional economic development differ in terms of local autonomy and formality (Nunn and Rosentraub 1997). Informal coalitions and information sharing networks to promote collaborative objectives provide the greatest autonomy (Feiock and Scholz 2009). At the other extreme, formal metropolitan government units can redefine the scale of service delivery and administration to a metropolitan area rather than at a local level, transferring autonomy away from the locality (Nunn and Rosentraub 1997). This variation in regional strategies can be captured by the single dimension of *flexibility or self-governance* (Feiock and Scholz 2009). Flexibility in regional governance is determined by the degree of local autonomy, the number of participation requirement, and the formality of institutional arrangements.

For example, consolidation, government-mandated units and regional councils represents a less flexible approach by allowing less local autonomy and constraining the activities of individual jurisdictions. On the other hand, networking, coalitions, or alliances are more flexible tactics in that they create formal or informal institutional arrangements achieving regional economic growth through voluntary self-governing mechanisms that retain local autonomy. In doing so, the self-governing approaches coordinate only a limited range of issues and thus are easier to implement (Olberding 2002). While this "targeted" approach includes both regional partnerships and joint development ventures, these two approaches imply different policy scope

and participation requirements. Regional, multilateral alliances lie to the end of this continuum indicating less flexibility, but bilateral coordination though voluntary agreement provides more flexibility and lies closer to the opposite end of this continuum by addressing only one or a small set of services (Feiock and Scholz 2009).



<Figure 1.1 > Spectrum of Regional Governance on Flexibility Dimension: modified from Nunn& Rosentraub (1997) and Feiock & Scholz (2009)

As intergovernmental programs evolve, nongovernmental organizations expand their scope of operations, and as policymaking resources are held by entities other than single jurisdiction, collaboration becomes a way that local jurisdictions can strategically pursue their political and economic objectives (Agranoff and McGuire 2003). Among these many options, one increasingly popular mechanism for cooperative regional governance is a voluntary regional partnership of local governments, often with the aid of businesses and community groups. Olberding (2002) identifies 191 regional partnerships for economic development in 244 U.S. metropolitan areas. According to this research, regional partnerships coordinate and collaboratively support marketing and recruitment efforts and in some instances impose constraints on members (Olberding 2002).

The emergence of "new regionalism" provides theoretical support for the idea that voluntary cooperation among governments can be a viable strategy for promoting regional action among fragmented local jurisdictions. More optimal outcomes can be achieved when local

governments recognize their interdependencies and behave in a coordinated way (Barnes and Ledubur 1998; Dodge 1996; Wallis 1994; Peirce 1993; Grell and Gappert 1992). In this regard, decentralized regional governance is formulated to address emerging and urgent issues such as fiscal disparities, social segregation, environmental problems, economic expectations, and so forth, which involve the interests of multiple parties (Savitch and Vogel 2000). In order to do so, local governments share the resources and jointly respond to emergencies as well as deliver routine services. The scope of cooperation can be small, as when adjacent jurisdictions enter into a joint venture to share the cost of promotional advertising, or it can be large, as in collaborative efforts to develop an industrial or research park (Feiock, Steinacker and Park 2009). These instances demonstrate that even a polycentric system of governments in metropolitan areas can generate collaborative regional solutions to address problems shared by more than one jurisdiction.

However, various modes of collaborative strategy turn out to be vulnerable to collective action problem. In other words, since there are often strong incentives to free-ride, overcoming commitment problems remains the essential issue in collaborative economic development. The free-rider problem might be especially severe in the case of regional, multilateral institutional arrangements, since multiple players are involved and calculation of transaction costs is more likely to be indirect. Also, disagreement based on unequal needs, unequal resources, and inequities in power and accountability around policy issues can exist from the beginning. All of these factors increase the complexity and uncertainty involved in building up a collaborative regional partnership. Olson (1965) asserts that fragmentation decreases the possibility for successful collective action, absent selective incentives which could be provided only to cooperators. This applies to local governments in metropolitan areas pursuing economic development. Inasmuch as decentralized decision making can generate collaborative regional solutions, it also might lead to non-cooperation and destructive competition. These collaborative regional governance strategies can be successfully employed only when competitive perceptions and motivations are overcome (Gordon 2007).

1.2.2 Regional Partnership for Economic Development

Over the past several decades, regional partnership for economic development has emerged as a new institutional organizational arrangement. This organizational arrangement is

purported to have sufficient scope, responsiveness, and flexibility to provide the foundation for economic development (Clarke and Saiz 1996). This new approach is characterized not by the type of policy instruments but rather by the type of organization (Olberding 2002). Government agencies, private associations such as the chamber of commerce and downtown business association, and local corporations have provided the institutional infrastructure for local development efforts (Agranoff and McGuire 2003). Most regional partnerships for economic development have been formed after 1980. The majority of regional partnerships were formalized through some type of written documentation including articles of incorporation, interlocal agreements/memorandums of understanding, regional or strategic plans, written contracts other than interlocal agreements or memorandums of understanding, codes of behavior or protocol, and legislation (Olberding 2002). Participation and membership often include local governments, business leaders, and chambers of commerce that are typically represented on the governing boards. The public-private nature of these organizations is confirmed by the fact that financial contributions from government and the private sector are almost evenly split: Although local governments contribute funds that account for a large portion of regional partnership budgets, state and federal government also make a certain level of financial contributions (Olberding 2002). On the other hand, some of the most common development activities conducted by regional partnership are related to marketing and government affairs; marketing activities include developing brochures and other materials, attending nation-wide trade shows, and purchasing advertisements. Government affairs activities include lobbying government for infrastructure improvements and helping businesses grant tax incentives. Other common activities are sponsoring workforce development programs and developing strategic plans for regional economic development.

Table 1.1 presents a regional pattern on regional partnership formation during 1990-2007. Overall, about 58% (161) of metropolitan areas have one or more regional partnerships for economic development. The fact that more than half of metropolitan areas in every region have utilized regional partnerships for regional economic growth reveals that regional partnership formation has been a popular strategy across the nation during that span. While metropolitan areas in both the Midwest (66.2%) and West (63.6%) regions have been more active in establishing regional partnerships for economic development than the national average (58.3%), metropolitan areas in the South (52.1%) region have adopted regional partnerships less

frequently than other regions. The percentage of metropolitan areas with regional partnerships in the Northeast region (57.1%) is about the same as the national average.

<Table 1.1> Regional Pattern on Regional Partnership Formation during 1990-2007

Region	Partnership	No Partnership	Total
Northeast	20	15	35
(% within region / % in MSA)	(57.1% / 7.2%)	(42.9% / 5.4%)	(100% / 12.7%)
Midwest	47	24	71
(% within region / % in MSA)	(66.2% / 17.0%)	(33.8% / 8.7%)	(100% / 25.7%)
South	63	58	121
(% within region / % in MSA)	(52.1% / 22.8%)	(47.9% / 21.0%)	(100% / 43.8%)
West	31	18	49
(% within region / % in MSA)	(63.6%/ 11.2%)	(36.4% / 6.5%)	(100% / 17.8%)
Total	161	115	276
(% in MSA)	(58.3%)	(41.7%)	(100%)

1.3 The Implications and Limitations of a Game Theoretic Perspective

Under what circumstances can a metropolitan area successfully form and maintain a regional partnership? Focusing on individual action and its motivation, the game theoretic approach provides an insightful explanation for the success or collapse of collective action. Assuming that actors are motivated by rational calculation of benefits and costs, a game theoretic approach views the emergence of collective action as determined by the strategic decision making of participants and their interactions. Strategic interaction implies that actors are aware of their interdependence and that in arriving at their own choices each will try to anticipate the choices of others, knowing that they, in turn, will do the same (Scharpf 2001). This implies that the micro level decisions of individuals ultimately determine the overall configuration of collective action. Individual participants will cooperate as long as their political or economic gains are substantial. By the same token, actors will decide not to cooperate if they contemplate that being a free-rider will turn out to be more beneficial. Therefore, successful collective action critically depends upon the benefits of cooperation outweighing the costs of monitoring individual compliance with group rules or norms (Ostrom 1990).

The typical example of a two-person prisoners' dilemma illustrates why a cooperation strategy among players is difficult to sustain. The basic dilemma in this situation is that actors are motivated toward mutual defection, yet the greater social reward (Pareto optimality) is obtained though mutual cooperation. Both actors will defect since in any situation defecting seems to be more beneficial than cooperating. The public good provision game carries similar implications regarding collective action problems. Since the individual has no incentive to contribute and it is difficult to exclude a free-rider from the group, the public good is likely to be under-provided (Issac and Walker 1988). In the setting of fragmented local jurisdictions, collaborative efforts are difficult to sustain for numerous reasons. Competitive motivations, the desire to retain jurisdictional boundaries, unequal resource endowments and needs, inequities in negotiating and bargaining position, low level of credibility, uncertain environments around collaboration, and numerous types of transaction costs, hamper the formation and maintenance of regional partnerships for economic development.

The game theoretic approach provides useful insights for understanding collective action problem, but what we can observe in reality sometimes diverges from theoretical predictions. Empirically, cooperation among fragmented local governments is not uncommon (Friesema 1970; Ostrom, Bish and Ostrom 1988; Post 2002; 2004). Literatures regarding regional partnerships for economic development confirm that the adoption of the collaborative regional approach has risen steadily during the past few decades (Bennett and Nathanson 1997; Raasch and Brooks 1995; Grell and Gappert 1993; Herschberg, Magidson and Wernecke 1992; Coe 1992; Higgins 1992). Similarly, the results of experimental studies in the game theory field suggest that contribution toward public good is more likely to occur than once expected. This is partly because the game theoretic model fails to capture the complexity of the collective action problem.

1.3.1 Social Contexts

Game theoretic approaches tend to take game setting as exogenous and neglect the fact that the action of players is affected by numerous factors other than payoff calculation and strategy. In fact, players in a game are often purposive interdependent actors and not independent agents looking for maximum benefits, as is the case in classical game theoretic model. The classical game theoretic approach focuses more on attributes of players instead of

relations among them (Garcia 2006). This "undersocialized" perspective (Granovetter 1985) emphasizes that the action of players determines the outcomes of the game, thus it is difficult to reflect how the change in environment, particularly game setting, can alter both the action of players and outcomes of the game. What determines the policy outcomes is not the game form but the institutional settings within which the games have to be played in reality (Scharpf 2001). These institutional factors often account for empirical variation around collective action problems as well. In this regard, both theoretical development and empirical evidence have demonstrated that game transition can change the underlying dynamics of a situation from zero-sum to non-zero-sum game (Aylward 2005). In other words, the social context in which a game is embedded can determine which game actors are supposed to play and, thereby, shape the action of players.

For example, Axelord (1984) and Taylor (1987) argue that a player is more likely choose cooperative strategies when confronting the repetition of games (Feiock 2007). Under the iterated prisoners' dilemma, cooperation based on reciprocity prevails, especially, if fixed geographic borders imply that neighboring jurisdictions are likely to be repeated players over various policy arenas. Under this situation, past interaction among participants affects present and future cooperation because actors consider their reputation (Andreoni and Miller 1993). On the other hand, the opportunity to communicate among players also increases the level of cooperation. Face-to-face communication can induce cooperation through exchange of commitments among actors. Communication enhances the chance that game players create trust and cooperative norms. Once created, cooperative norms are critical for shifting from competitive to cooperative behavior. Cooperative norms are a sanction that enhances commitment and facilitates cooperation of players (Axelord 1997). Considering reputation, communication, trust, and norms more seriously, the evolutionary game approach seems to do a better job of explaining how collective action occurs and why actors build and sustain cooperation over time (Ostrom 2000). In the regional partnership context, a tradition of a regional approach among local jurisdictions is more likely to foster new collaborative regional strategies (Olberding 2002; Heath and Henegar 1994; Grell and Gappert 1993).

1.3.2 The Players and Their Internal Attributes

The implicit assumption that players are identical in their preferences, power, and resource endowment also prevents the simple game theoretic model from adequately reflecting the complexity of collective action around policy making. Yet, in many cases, players are not identical, and, thus, a difference in their power and resources results in asymmetric influence on their behaviors and, thus, game outcomes. Several characteristics of players such as interests, resources, benefits, and costs may be critical to the creation of public goods (Monge and Contractor 2003). In this sense, characteristics and composition of players in a game might be important factors that can shape the game setting differently.

There are two contrasting theoretical arguments regarding the impact of actors' attributes on the level of collaboration. The first suggests that diversity and economic differences stimulate demand for collaborative regional development. On the demand side of institutional arrangements, economic need may influence the formation of regional partnership for economic development. From the perspective of social exchange or resource dependence theory, the limited resources of local jurisdictions may enhance the desire for regional cooperation (Pfeffer and Salancik 2003; Gulati and Gargiulo 1999). The second argument builds from the theory of homophily to argue that political and economic similarity brings cooperative strategy more easily since actors seek to forge relationships to others with whom they share similar attributes (Feiock, Steinacker and Park 2009; Ibarra 1992; Carley 1991). This suggests that more rigorous investigation of the relationships between game outcomes and actors' attributes is needed, for instance, if collective action problems among heterogeneous participants are to be fortified or mitigated.

More realistic assumptions about player's heterogeneity also allow the emergence of entrepreneurial leadership to potentially increase cooperative strategies in collective action situations. When a leading actor believes the return from the collaborative effort will outweigh its costs, he will undertake the effort to create common goals and objectives and to develop action plans. Leading actors might inherently possess superior power or resources than the rest of the group. Furthermore, actors with a risk-taking attitude might attempt to exploit the opportunity around overcoming collective action problem for economic development. In these cases, the emergence of leadership easily constructs the tipping-point, which reduces uncertainty and the free-rider problem. Therefore, entrepreneurship in certain players provides leadership

and management to ensure a supply of public goods without the vagaries of constant attempts at mass movements (Aylward 2005).

1.3.3 Nested Games

The existence of communication, reputation, trust, norms, leadership, and numerous other factors demonstrates that internal factors that define both attributes and the relationship among actors also play an important role in shaping the outcomes of games. The concept of "nested games" more systematically captures the potential complexity of games played in reality. In other words, social phenomena are modeled not in one massive, overall model but as one game within another game, both with different pressure on and inducements for players (Ostrom 2005; Aylward 2005). A nested game approach helps substantiate the idea of different games being played simultaneously depending on social contexts (Scharpf 2001; Tsebelis 1990). Tsebelis (1990) envisions a giant game which takes all contextual and institutional factors into account in the following two ways: First, the actor may choose a suboptimal strategy in one game if this strategy happens to maximize its payoffs when all multiple arenas are considered. Second, instead of confining himself to a choice among available strategies, an actor chooses among a wider set of alternatives by enlarging his strategy space. Therefore, not only does the action of players determine the outcomes of the game, the environment in which actors are embedded also can alter outcomes of the game by changing the behavior of players. Scharpf (2001) also points out that actors may respond differently to external constraints and opportunities because they may differ in their intrinsic perceptions and preferences but also because their perceptions and preferences are very much shaped by the specific institutional setting within which they interact. In the same vein, Liu's (2006) spatial supergame model also attempts to capture game complexity by emphasizing the fact that players are playing multiple issue games simultaneously and continuously. Elinor Ostrom's institutional analysis and development (IAD) may be the most well known attempt to combine an actor-based and institutional-centered approach in an integrated framework (Ostrom et al. 1994; Ostrom 1990).

This dissertation starts from a recognition of the importance of social contexts which construct the game environment. Granovetter (1985) describes the traditional game theoretic approach as "undersocialized" providing only a limited explanation of collective action. A micro-level approach, working from individual level actors upward (Reich 2000),

overemphasizes the fact that the action of players determines the outlook of the game. In doing so, it neglects the fact that the behavior of actors, in turn, can be affected by the structure of the game. In fact, the action of the players and structure of game interact with each other. Players shape the structure of the game, but structure also determines what players can do. In order to better understand the game and its implication, structures should be considered to be both the medium and the outcome of the practices which constitute social systems (Giddens 1984). Actor-theoretic or rational-choice and institutionalist or structural paradigms, which are conventionally treated as being mutually exclusive, should be integrated (Scharpf 2001). In this manner, this dissertation seeks to balance "undersocialized" and "oversocialized" approaches by extending the traditional game theoretic approach. In order to do so, this dissertation views that social relations among actors as well as their rational calculation of benefits and costs play a critical role in defining the choice of players in collective action situations. Building upon social network theory and institutional collective action theory, this dissertation elaborates how game predictions can be altered by social relations and the structure of network relationships among actors.

1.4 Social Network Structure and Difference in Attributes

A social network perspective offers the foundation necessary to study actors involved from a relational and structural view (Garcia 2006). The structure of social networks is essential to understanding the opportunities and restrictions of actors, in accordance with their positions in them. In particular, social relations affect actor's decisions and help them overcome collective action problems. For example, when actors are tightly linked with each other, deviation from collaborative efforts is less likely to occur because defection is more likely to be detected. Players concerned with building a reputation within the group also choose cooperative strategies more frequently. Entrepreneurial behavior in leading players can also enhance the level of cooperation by reducing uncertainty. These examples illustrate that social relations among actors as well as their rational calculation of benefits and costs play a critical role in defining the choice of players in collective action situations. The social network structure along with the consideration of actors' attributes is expected to adequately represent the underlying complexity of social relations among actors.

The network structure of interlocal relations can also play a key role in the formation and effectiveness of alliances or agreements (Feiock, Steinacker and Park 2009; Thurmeier and Wood 2002). Over time embedded relationships with other local governments accumulate into a regional network that invests the reputation and reciprocity of information in the reliability and competencies of prospective partners (Feiock, Steinacker and Park 2009; Gulati and Gargiulo1999). Throughout this process, networks of relationships among local government units provide a critical mechanism for overcoming barriers to collective action such as uncertainty and transaction costs. In other words, the existing structure of formal and informal relations among local governments reduces both the free-rider problem and transaction costs by increasing information available about each other and making cooperative efforts credible.

Two general propositions regarding the role of social relations in overcoming collective action problem have been advanced (Feiock and Scholz 2009; Feiock 2007; Scholz, Berardo, and Kile 2008): One emphasizes tightly-clustered or strong-tie relationships enhancing the credibility of commitments among players. The other emphasizes the role of extensive weak-tie relationships linking players with shared information required to coordinate collective decision. Starting from these general propositions, this dissertation develops testable hypotheses regarding the role of network structures in changing the way a game is played.

A clustered network structure can transform a zero-sum game into a non-zero sum game because information about players, especially regarding previous decisions, is relatively open to network participants. This reduces the possibility of breaking trust established among participants. A densely-populated network provides an extensive monitoring mechanism and facilitates mutual reciprocity, trust, and conformance to the rules of the game (Coleman 1988). Consideration of reputation, communication, trust, and social norms, makes players more likely to build and sustain cooperation. Social capital theorists argue that cooperative norms, which are the product of repeated interaction, turn into social capital and cumulated social capital, in turn, makes collaborative work easier and facilitates economic and community development (Ostrom and Ahn 2002; Ostrom 2000; Putnam 2000). In so doing, social capital lessens transaction costs and institutional friction, which allows participants to overcome social dilemmas. In this sense, a highly-clustered network has the ability to impose constraints on defection and opportunism so that it increases the stability of a regional governance structure (Feiock, Steinacker and Park 2009).

On the other hand, the emergence of leadership in weak-tie relationships also provides the potential to improve cooperative strategies among actors in collective action situations by redirecting the information and resources available. Without emotional attachment and previous interactions, each player might build up reciprocity and trust with only a limited number of colleagues. In practical terms, constraints on resources and information prevent players from investigating all the social relations surrounding them. Instead, an entrepreneurial leading player explores a broader set of possible gains from other players and provides useful information to coordinate each player's decision and its consequence. In this sense, the existence of leading players reduces uncertainty around coalition building and free-rider problems. Entrepreneurship within a group can enhance the efficiency of collaborative efforts by providing leadership and management to ensure an achievement of common goals without the vagaries of constant attempts at mass movements (Aylward 2005). The concept of "structural holes" views this type of information-bridging as an important role for leaders within a network that provides advantages when negotiating collaborative actions. As an example, Feiock, Park and Steinacker (2009) identify situations where a multilateral solution might provide more effective policy coordination, yet, absent an existing organization or entrepreneur, local governments confront a free-rider problem in constructing the organization.

The task in social network theory is to develop an overarching theoretical explanation of the seemingly contradictory roles of network structures and social capital in overcoming collective action problems. One the one hand, social capital theories (Ostrom and Ahn 2002) suggest that communication, trust, and norms are more likely to be established when actors are closely linked to each other. On the other hand, structural hole theory (Burt 1992) suggests that people who seeks to exploit social gaps contribute to enlarging the set of alternatives. Of course, it seems quite obvious that individuals and organizations do both at the same time. Although each theory provides insightful conceptualization of network structure around collective action, this shows the problem of network research based only on a single theory, which tends to account for relatively small amount of network variance. Monge and Contractor (2003) argue that utilizing multiple theories should improve our understanding of the relational aspect of interactions. They assert that this work can be implemented when researchers collect and collate data at various levels of analysis (ego, dyad, triad, group, organizational, and interorganizational) and conduct multilevel analysis.

Burt (2005)'s recent work attempts to integrate multiple theories with a framework that captures both closure (strong-tie) and brokerage (weak-tie) aspects of social networks. Closure is about subjecting a person to control in order to lower the risk of trusting the person, and brokerage is about seeking variation by escaping the constraints of one group (Burt 2005, p 108). Network closure may be essential for collaboration because without a high degree of trust among the members, the institutional arrangements could not exist. On the other hand, network brokerage is important not only to brokers themselves, but also to the group as a whole, because entrepreneurial brokers explore a broader set of possible options within, and perhaps beyond, the group by redirecting useful resources and information, which can coordinate each player's decisions and their consequences. Brokerage is both a substitute and a complement to closure in that structural holes depend on the level of trust, but trust is a feature of a closed network, precisely the condition that brokers rise above. A contradiction arises from closure-brokerage tension in the following three senses (Burt 2005): First, while third parties create social capital by improving information flow in the closure mechanism, network bridges are defined by the lack of third parties. Second, whereas information is valuable when it is redundant in the closure network, brokerage creates value by exposing people to non-redundant variations in information. Third, while closure attempts to force people to behave in prescribed ways by complementing the traditional vertical chain of command in a bureaucracy, brokerage helps people to explore alternatives by exposing them to a diversity of options.

Burt (2005) suggests that closure-brokerage tension could be addressed by integrating both mechanisms in a broader model of "structural autonomy." Bridging a structural hole can create value, but delivering the value requires the closed network of cohesive members around the bridge. A structurally-autonomous community, which is considered as the state of balance between high closure and high brokerage, consists of participants strongly connected to one another, with extensive bridge relations. In the collaborative regional governance context, a regional partnership is more likely to be established and perform better in a community where local actors are closely linked to each other and entrepreneurial leadership explores a broader set of possible alternatives.

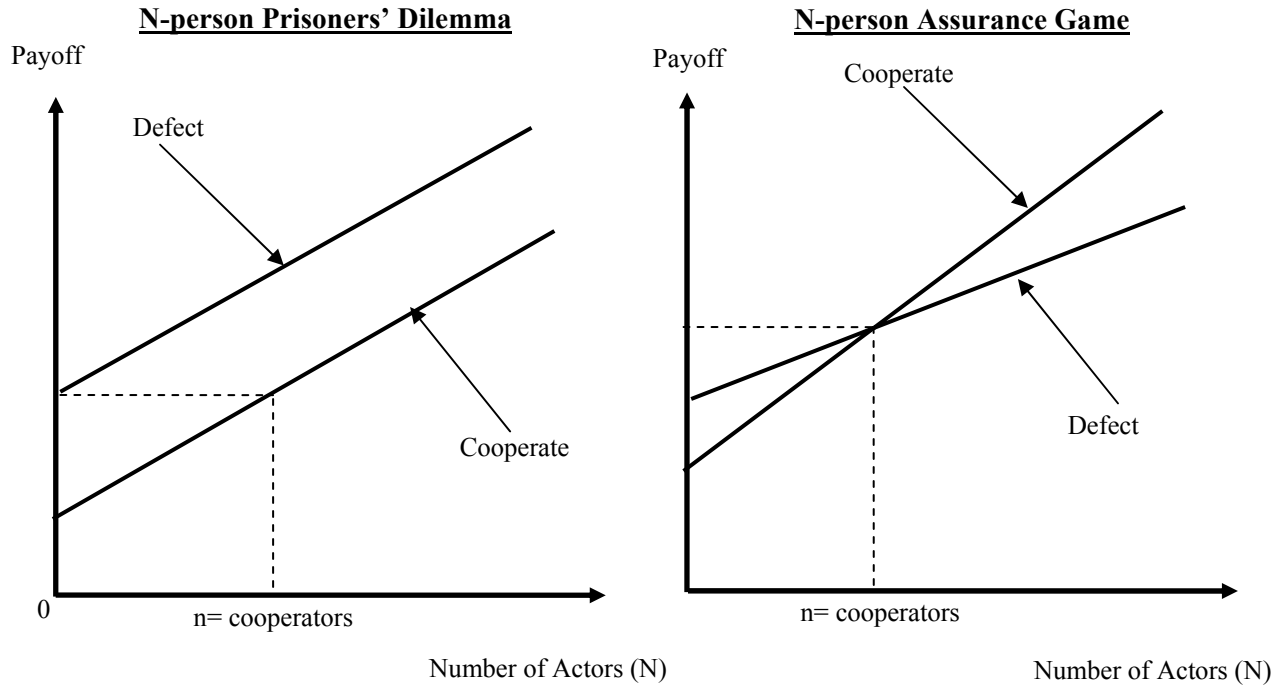
1.5 From Prisoners' Dilemma Game to Assurance Game

The introduction of actors' attributes, the role of institutional arrangements, the concepts of nested games, and social networks perspective to classical game theoretic approach suggests that social structure plays an important role in defining the choice of players in collective action situations. In other words, game transition can change the underlying dynamics of a situation from zero-sum to non-zero-sum game (Aylward 2005).

Metropolitan relationships have probably been most commonly depicted as prisoners' dilemma game, especially in the area of economic development (Bowman 1988; Grady 1987; Rubin and Rubin 1987). The basic problem in this dilemma is that players are motivated toward mutual defection, yet the greater social reward (Pareto optimality) is obtained though mutual cooperation. The public good provision game carries similar implications regarding collective action problems by its setting to *n*-person environment. Though initially appealing, a prisoners' dilemma game does not hold its plausibility even in the area of economic development in that it is particularly limited in addressing divergence in preferences, asymmetry in player resources and positions, and social surroundings in which players are embedded (Steinacker 2004; Aylward 2005). Moreover, it simply neglects the fact that institutional mechanisms provide a rationale for players to choose cooperative strategies and that social relations often alter game environments endogenously. These limitations imply that the prisoners' dilemma game describes merely one type of social situation where individual motivations conflict with socially desirable outcomes among many possible variations.

The assurance game is one well-known example of variations that focus on a situation where defection is no longer a dominant strategy due to a change in payoff structures. In other words, the model suggests that lowering payoffs resulting from defection or increasing payoffs for cooperation can induce players to exercise collaborative strategies more frequently. As shown in Figure1.2, cooperation can be a much more attractive strategy under the assurance game if there are a sufficient number of cooperators while it is simply not possible under the prisoners' dilemma. Social relations among game actors play an especially important role in changing payoff structures by reducing transaction costs and expanding potential benefits from mutual collaboration. In the case of metropolitan governance, since the interactions among local jurisdictions are iterated over numerous policy arenas facing fixed geographic borders and their decisions, communication, and actions are likely to be closely monitored, players are able to

reach a cooperative agreement which can overcome collective action dilemmas. While cooperative agreements become a basis for cooperative norms, once created, cooperative norms are critical for shifting from competitive to cooperative behavior. This implication of assurance game suggests that not only does the action of players determine the outcomes of the game and environment in which actors are embedded but also can alter outcomes of the game by changing the behavior of players. Therefore, this dissertation starting by questioning under what conditions, if any, a metropolitan area can successfully accomplish game transition from prisoners' dilemma to assurance game.



<Figure 1.2> Game Variation in Prisoners' Dilemma: from Aylward (2005)

1.6 Importance of This Study

The purpose of this dissertation study is to investigate the factors which affect regional partnership formation in metropolitan areas while examining institutional collective action (ICA) framework of interlocal collaboration as an overarching theoretical foundation. Although various approaches have been employed to address collective action dilemmas in metropolitan governance, the context of regional partnerships has not been sufficiently studied theoretically

and empirically. By emphasizing the uniqueness of regional partnership as a regional governance mechanism, this dissertation study attempts to contribute to the better understanding of regional governance issues based on its relatively unique approaches in a number of ways: 1) regional partnerships as an outcome of voluntary multilateral agreements, 2) integration of an "undersocialized" and "oversocialized" explanation of collective action, and 3) a structured combination of formal modeling and empirical testing in the research design.

1.6.1 Regional Organizations (Partnerships) as Governance Mechanism

Among the many alternative metropolitan governance mechanisms, regional partnership provides a relatively unique setting to study collective action problems in regional collaboration in two ways: First, since regional partnerships are established based on multilateral agreements among numerous potential participants, they tend to cause more complicated issues such as free-rider problems, fragmented decision-making systems, and group size effects. Multilateral self-organizing governance requires negotiation to reach consensus, a process that potentially develops trust and reciprocal relationships among members that is critical in reducing the costs of reaching and maintaining an agreement, but in a much more complicated manner. In other words, since multiple players and interests are conflicting with one another, complexity and uncertainty may become more vivid and problematic than addressing bilateral interlocal agreement issues, even though it is much more profitable, once it achieve its intended goals.

Second, among many multilateral institutional arrangements, the emergence and sustainment of regional partnerships is based on more voluntary collaboration mechanisms than other alternatives. In other words, while some of multilateral agreements and organizations such as Regional Councils (RCs), Councils of Governments (COGs), and Metropolitan Planning Organizations (MPOs) are mandated by state laws and other supplementary legal systems so that they generate relatively less interesting variations across metropolitan areas, regional partnerships demonstrate a great deal of variations in their formation and maintenance due to their voluntary and self-organizing nature. Therefore, regional partnerships provide a relatively ideal setting to study how some of factors affect the formation of voluntary regional organizations for economic development.

1.6.2 Integration of Approaches

Although this dissertation starts by developing a game theoretic model of institutional collective action (ICA) in metropolitan governance, it acknowledges the importance of social contexts which construct the game environment by incorporating a social networks perspective. As Granovetter (1985) points out, the traditional game theoretic approach provides a limited description of collective action situations by emphasizing an "undersocialized" perspective. This "undersocialized" perspective views that the action of players determines the outcomes of the game, thus it is difficult to reflect how the change in environment, particularly game setting, can alter both the actions of players and outcomes of the game. In fact, the actions of the players and the structure of the game interact with each other. Players shape the structure of the game, but structure also determines what players are expected to do. This implies that the structures should be considered to be both the medium and the outcome of the practices which constitutes social systems in order to better understand the game and its implications (Giddens 1984). What determines the policy outcomes is not the game form but the institutional settings within which the games have to be played in reality (Scharpf 2001). At this point, institutional factors often explaining empirical variation around collective action problems are eespecially highlighted. In this sense, actor-theoretic or rational-choice and institutionalist or structural paradigms, which are conventionally treated as being mutually exclusive, should be integrated (Scharpf 2001). This dissertation seeks to balance "undersocialized" and "oversocialized" approaches by extending the traditional game theoretic approach. To achieve this goal, this dissertation views that social relations among actors as well as their rational calculation of costs and benefits play a critical role in defining the choice of players in collective action situations. Building upon social network theory and institutional collective action theory, this dissertation investigates under what conditions a metropolitan area might successfully achieve game transition from zero-sum to non-zero-sum situations.

1.6.3 Research Design: Empirical Implications of Theoretical Models

Finally, this dissertation attempts to address both analytic formal modeling and empirical validation in its methodological approach. Thus, this dissertation seeks to achieve potential inferential value that might come from a closer integration of rigorous theorizing and empiricism (Aldrich et al. 2008). In fact, long standing research conventions of these research approaches and

their insufficient interaction between theory and empirics produced irrelevant deductions and false empirical inferences. In other words, formal modeling, based on a series of unrealistic assumptions, may build elegantly parsimonious models of irrelevant universes, but empirical studies often simply exploit statistical hypotheses testing without well-established theories to find a model that fits a sample well. This suggests that empirical modeling choices allow a researcher to discover the relationships that are not genuine. In isolation, both traditions are equally vulnerable as a research design.

This dilemma can only be overcome if researchers utilize a structured combination of a set of tools designed to increase transparency and improve modeling (de Marchi 2005). Recent emergence of the Empirical Implications of Theoretical Models (EITM) approach has been a well-known attempt to search for a proper approach to mathematical modeling in the social sciences. As a research design method, its goal is to bridge the chasm between formal modelers and empirical researchers, with the hope that this synthesis will lead to better models that have clearly testable empirical hypotheses (de Marchi 2005). This implies that a structured combination of formal modeling and empirical testing is superior to any approach taken in an isolated manner. While an increasing volume of articles and dissertations has employed EITM approaches in order to enhance their transparency in the field of political science, these approaches have not been utilized seriously in studies of public administration and policy. This dissertation, first, develops formal model of regional partnership formation based on a deductive approach, which allows us to derive some working hypotheses directly from this formal approach. This work is expected to allow an easier transition to empirical tests; it provides the baseline for empirical analysis in the later stage examining whether or not those hypotheses are consistent with model predictions. In doing so, it attempts to bring deduction and induction, hypothesis generation and hypothesis testing close together and reduce the gap between analytical game theoretic models and their empirical referents in the area of urban studies.

1.7 Overview of the Dissertation

Chapters 2 and 3 provide the theoretical background for this dissertation study. Chapter 2 discusses approaches to regional governance issues, focusing on regionalism perspectives, and reviews the institutional collective action (ICA) framework. The chapter also explains why both public good provision literature based on game theoretic approaches and social networks

perspectives can be useful in capturing the essence of collective action problems in metropolitan governance.

After reviewing the basic elements of institutional collective action (ICA) framework, Chapter 3 extends ICA framework by combining game theoretic approaches and social network perspectives. While defining the factors associated with regional collaboration, this chapter seeks for a middle ground between "undersocialized" and "oversocialized" approaches.

Chapter 4 discusses the scope of the research and describes the research design which is employed in this dissertation. After briefly reviewing the strategies of each stage, the discussion focuses on how a structured combination of formal modeling and empirical testing is superior to any approach taken separately. Furthermore, it also argues that by empirically testing hypotheses directly derived from formal theories and models, this approach is expected to enhance transparency in studying metropolitan governance and regional collaboration.

Chapter 5 develops a basic formal model of regional partnership formation by focusing on the complexity and uncertainty around collective action situations in regional collaboration. Based on a developed model, this chapter examines how some game theoretic variables -- especially group size, the degree of decision concentration (fragmentation), benefits/costs structure-- affect the likelihood of collaboration at both the individual and collective level. A formal model of regional partnership formation in this chapter provides the foundation for the next empirical analysis stage.

Chapter 6 focuses on empirical validation of hypotheses developed in the previous chapters. In others words, the chapter discusses where the complexity of regional collaboration comes from and, then, examines the impacts of nature of collective action, and the contextual and relational characteristics of potential participants on regional partnership formation by employing empirical data analysis.

Chapter 7 summarizes the findings of the research in Chapters 5 and 6 and discusses the practical as well as theoretical implications of this research. Finally, there is a brief discussion about a potential extension of this dissertation.

CHAPTER 2
REGIONAL GOVERNANCE and ECONOMIC DEVELOPMENT: A REVIEW OF THE LITERATURE

2.1 Regional Governance

Despite substantial volumes of academic and practical studies of interlocal relations, it still remains unclear how and to what extent the seemingly independent jurisdictions within metropolitan regions actually collaborate with one another in providing public goods. How does a fragmented system of local entities create many types of voluntary self-organizing institutions that operate as if they are a single integrated system?

One way to investigate these questions is to begin by viewing metropolitan governance as an "institutional arrangement" (Ostrom 1990). Institutional arrangements essentially provide rules that govern the interactions of jurisdictions and authorities within a metropolitan area in the production and provision of collective goods. In this sense, metropolitan governance is a mechanism that directs local efforts to solve the puzzle of jurisdictional boundaries in the best way by altering existing institutional arrangements or creating new ones. Therefore, creating public goods and the institutional benefits of such a creation through collective action is a central motivation of collaboration among local governments. However, depending on the nature of the dilemmas local governments in the region confront, they tend to create a wide variety of alternative institutional arrangements.

In other words, there is more than one way to create regional institutions to foster the formation of metropolitan governance. More practically, the institutional mechanisms developed to promote regional activities differ in terms of local autonomy allowed and its formality (Nunn and Rosentraub 1997). Institutional arrangements here may include establishing more loosely formed informal coalitions and information sharing networks to promote collaborative objectives. This creates the stability of relationship among local governments, yet still allowing the greatest autonomy (Feiock and Scholz 2009). At the other extreme, formal metropolitan government units such as regional councils of governments or special purpose governments, which require some forms of statutory authorization, can be established. Once created, these can redefine the scale of service delivery and administration to a metropolitan area rather than a local level, transferring autonomy away from the locality (Friesema 1970; Nunn and Rosentraub 1997).

This variation in regional strategies can be captured by the single dimension of *flexibility or self-governance* (Feiock and Scholz 2009). *Flexibility* for regional governance is determined by the degree of local autonomy allowed, the number of participation requirement, and the formality of institutional arrangements.

While the distinction among these alternatives based on the *flexibility* dimension seems to be more obvious, the underlying problems that induce different sets of institutional arrangements still remain unanswered and there is also little empirical evidence to confirm which institutional arrangements are more advantageous in particular situations to promote regional economic growth and fiscal health. For example, one stream of literature advocates formal governmental entities as a mechanism that could encourage local governments to collaborate for common interests, not only with different levels of government or other local governments but also across sectors (Grell and Gappert 1993; Mitchell-Weaver et al. 2000; Wallis 1994). Consolidation, government-mandated units and regional councils of governments represent a less flexible approach by allowing less local autonomy and constraining activities of individual jurisdictions. Such institutional arrangements have been described as a process of steering, influencing, and balancing the interactions between public and private sectors (Andrews 2006; Wood 2002). However, existing local jurisdictions often resist to delegating much of their authority to this formal government unit and generally resent additional layers of government (Post 2002; Stein 1980). And it often constrains the decisions and behaviors of participating jurisdictions even in completely different policy domains. Therefore, although the structures of these institutional arrangements are formal and mandatory, they often fail to formulate or implement solutions to region-wide problems since local jurisdictions are, in fact, reluctant to operate and implement these mechanisms unless it provides an incentive to make a real contribution toward its success.

On the other hand, informal institutional arrangements such as networking, coalitions, or alliances are more flexible tactics in that they attempt to achieve the same regional goals through voluntary self-governing mechanisms that retain local autonomy. In doing so, the self-governing approaches are expected to coordinate only a limited range of issues and, thus, are easier to implement (Olberding 2002). This implies that these approaches possibly make adaptive and more flexible arrangements to micro-govern, reflecting the actors' selective incentives, in order to mitigate collective action problems depending on different forms of uncertainties. However, the formation of more informal governance structures based on selective incentives is

constrained by the costs of developing and reinforcing the institutional arrangements because they may need to provide as many case-by-case solutions as possible whenever different contingencies require them to do so.

While the concept of regional governance generally captures two contrasting perspectives of institutional arrangements, two approaches have different implication about policy scope, the participation requirement, and the attitude toward collective and selective incentives. In other words, although there has been extensive investigation of many institutional arrangements for regional governance, the studies tend to focus on different aspects of the same features of institutional arrangements since they are based on different theoretical perspectives--public choice theory tradition and the regionalists tradition.

2.2 Two Models of Regional Governance

2.2.1 Public Choice Model

In his seminal article, Tiebout (1956) posited that local jurisdictions compete with each other on local expenditures. His model assumes that each citizen is fully knowledgeable about their options regarding public services and taxes and that they are fully mobile and, thus, will choose the community which "best satisfies its preference pattern for public goods" (Tiebout 1956). Therefore, public choice models view that small autonomous and multiple units of local governments result in an efficient outcome since they enable citizens and businesses to choose jurisdictions where the level of public services and taxes most closely matches their preferences (Ostrom, Tiebout and Warren 1961; Oakerson 2004; Tiebout 1956). In addition, the pluralistic nature of the decision-making system improves democracy as politicians respond to increasingly mobile and knowledgeable constituents (Roeder 1994; Olberding 2000). This is the notion that citizens can "vote with their feet" in favor of government policies and programs by continuing to reside in the jurisdiction, or oppose them by moving out of the jurisdiction.

Since Tiebout's work, other social scientists have incorporated the notion of public choice theory into their studies of the relationships of local politics and policy. Their arguments are basically that the competitive nature of the provision of public goods and the sets of rules used to govern these interactions will create collective benefits to a metropolitan area and its communities (Peterson 1981).

While public choice models have contributed to improve our theoretical understanding of interjurisdictional competition, they also have been criticized by political scientists and economists due to their unrealistic assumptions and little empirical support (Peterson 1981; Teske et al. 1993). In a more practical sense, critics have argued that interjurisdictional competition is undesirable since it places local jurisdictions in a "bidding war" for a limited number of residents and businesses, which leads to a "zero-sum game." In other words, when a city wins the war through the relocation of a business to its jurisdiction, jobs and income are simply moved from one jurisdiction to another (Roeder 1994).

2.2.2 Traditional Regionalists Model

In contrast to the public choice model, civic reformers of the 1900s and public administration traditionalists had argued for radical reforms by consolidating local governments into a single-tier or two-tier structure to resolve the metropolitan crisis, particularly in urban areas (Studenski 1930; Yates 1978; Nieman 1976). Their basic argument was that a small number of local governments would result in economies of scale, allow greater opportunity to address significant urban issues, and provide more political accountability by treating all citizens more equitably (Lyons, Lowery and DeHoog 1992).

Further, some recent urban scholars and practitioners have argued that cities in a metropolitan area are interdependent (Hershberg 1996; Wallis 1994; Grell and Gappert 1993). Advocates of the regional model have posited that a more socially desirable outcome can be accomplished when local jurisdictions recognize their interdependencies and act in a more coordinated way (Wallis 1994; Pierce 1993; Grell and Gappert 1993; Dodge 1996). This school has asserted that interdependence among cities in a metropolitan region has strengthened during the past several decades for at least three reasons: 1) socioeconomic linkages among cities in a region have strengthened; 2) an increasing number of citizens have a regional lifestyle; and 3) interjurisdictional issues and problems have grown in number and intensity (Olberding 2000).

Moreover, since socioeconomic interdependence among cities in a region has increased and more citizens share a regional lifestyle, social issues and problems "spill over" jurisdictional lines to a greater degree. In other words, because there is a significant increase in the number and intensity of problems such as diseconomy of scale, urban sprawl, income disparity, and so on that are not confined by jurisdictional boundaries, there has been growing demand that local

governments in metropolitan areas begin to "regionalize" social issues and problems that are not defined as independent. Therefore, advocates of this model argue that regionalism has become a more appropriate model for metropolitan governance in the U.S.

The theoretical debate over the form of metropolitan governance suggests that different forms of institutional arrangements are expected to result in distinct policy outcomes (Nelson 1990; Nelson and Foster 1999). The relative strengths of those policy outcomes are at the center of the consolidation-fragmentation debate. However, most recent lessons suggest that regional institutions play a central role in encouraging regional integration (Savitch and Vogel 2000; Barnes and Ledebur 1998; Dodge 1996; Orfield 1997; Wallis 1993). These suggestions emphasize the role of regional institutions in promoting the region's economic and fiscal health and enhancing regional cooperation between central cities and their suburbs. In this sense, the recent debate about regional governance has shifted from one that focuses the importance of "government" to one that emphasizes "governance" (Frug 2002; Savitch and Vogel 2000). The movement that calls for "governance without government" suggests the formation of regional institutions either through collaborative efforts established across sectors such as private-public partnerships and regional alliances (Savitch and Vogel 2000), or through a centralized regional structure created through councils of governments or special purpose governments (Andrew 2006; Miller 2002; Phares 2004).

2.3 Two Approaches to Regionalism

While strategies to "regionalize" interdependent social issues become more popular due to the nature of the problems in which local governments are embedded, there has been a broad array of regionalist approaches to address coordination and cooperation among cities. These regional strategies can be categorized into two approaches based on the scope of activities which local governments attempt to address. The first approach includes strategies that attempt to coordinate a large set of goods and services across local governments or even to coordinate local governments in general. These strategies addressing a large scope of public policies and programs include consolidated government, annexation, metropolitan government, and regional councils of government.

However, strategies to "regionalize" a broad array of local government activities have received the criticism that such governing systems are politically and economically unfeasible;

they are rarely successful given the conflicting interests and autonomy issues involving local governments, so they have never been extremely popular and are becoming even less popular (Rusk 1995). Politically, a fragmented political system allows the resistance of smaller municipalities to be subsumed into larger political units. Economically, especially from the perspective of public choice theory, a centralized political system could even be the creation of another tier of government at the metropolitan level that only leads to inefficiency in service provision (Ostrom et al. 196; Brierly 2004).

In contrast, the second approach includes strategies that attempt to coordinate only one or a few local government activities. Therefore, strategies within this approach tend to be easier to accomplish than strategies within in the first approach by allowing more flexibility to local jurisdictions. In this sense, the use of targeted regional strategies has been much more preferred: "The federally mandated regional planning efforts and the consolidation proposals of the past three decades are being replaced by voluntary cooperation among governments and sectors through, 'intercommunity partnerships" (Dodge 1990, p354). The strategies addressing a small scope of public policies and programs include written agreements among local governments, formal or information alliances and coalitions, multilateral partnerships, and joint ventures which have more flexible tactics.

Again, this theoretical and practical approach also emphasizes the role of institutional arrangements in the production and provision of collective goods by providing rules that govern interactions of local jurisdictions within a metropolitan area. In other words, many issues and problems in the metropolitan area are inherently institutional collective action problems. In fact, local governments experience only collective action dilemmas regarding the provision of public good rather than metropolitan crisis. This also implies that creating public goods and the institutional benefits of such a creation through collective action is a central motivation among local governments. Therefore, alternative institutional arrangement out of a wide variety of local jurisdictions that should be chosen depends on the collective action problem that confronts them. For example, local governments are expected to have a series of important decisions to make--whether to cooperate or compete with other jurisdictions from the beginning; whether to establish bilateral or multilateral agreements or even act unilaterally; whether to institutionalize those decision by creating more formal organization or legal entities; whether to invest the resources to monitor, enforce, and sanction their counterparts (Andrew 2006).

Therefore, even "targeted" approaches including both multilateral regional partnerships and bilateral joint development ventures have different implications in their policy scope and participation requirements. This also means that no single set of institutional arrangements are appropriate for effective delivery of particular services and alteration of specific strategies adopted by local governments. A decision to make alternative choices depends on how easy or difficult it is for local governments to address the collective action involved. For example, multilateral regional alliances may require more coordinating efforts to deal with many conflicting interests in order to be established, but bilateral agreements between actors may require more reciprocal cooperation and create more flexible institutions that address only one or a small set of services.

One of the major focuses of this dissertation is the formation of regional partnerships. Their formation is particularly interesting since they are an example of coordination and cooperation among a large number of potential participants in a competitive environment. The multilateral nature of their formation and maintenance is expected to make collaboration more complex and uncertain than in the case of bilateral agreements. On the other hand, their voluntary and self-organizing way of formation and maintenance is expected to create more substantial variances among metropolitan areas than the cases of regional councils of governments or metropolitan planning organizations. In this regard, the next section will briefly review collective action problems especially regarding economic development in metropolitan areas and how they have induced the emergence of regional partnerships.

2.4 Economic Development Policy and Regional Partnerships

Economic development strategies are policies and organizations designed to expand the economy of a particular area in order to raise the standard of living of individuals living in that area (Olberding 2000). They include "those efforts by government to encourage new business investment in particular locales in the hopes of directly creating or retaining jobs" (Eisinger 1988, p3-4). This economic development function has been relatively decentralized in the U.S. (Eisinger 1988). Economic development strategies are made and implemented by state and local governments and often by private sector organizations such as chambers of commerce and development corporations (Andre 1994). This implies that economic development in a fragmented metropolitan system has been traditionally understood as a competitive environment

in which local jurisdictions compete with each other for jobs and growth by utilizing tax, spending, zoning, and other regulatory provisions as incentives to induce a specific firm to locate or to retain it in its own jurisdiction as opposed to another city (Feiock 2002).

However, the existence of positive and negative intergovernmental externalities from growth creates a need for more integrated solutions to address more complicated issues such as economies of scale, urban sprawl, income inequality, environmental impact, and so on. For example, many local governments within metropolitan areas hardly possess the capacity to achieve economy of scale through techniques such as hiring highly-trained personnel and using specialized policy tools. Some jurisdictions struggle with many problems largely because of a limited tax base and other jurisdictions are blessed with riches and few urgent issues. On the other hand, the increasing need for coordination in regional "spillover" issues is simply too difficult for independent local governments to address individually since the task of getting them to agree on a plan of action is formidable and, at times, impossible (O'Toole 2000). In particular, economic "spillover" and interdependencies emerge between central cities and their suburbs (Post 2002). Empirical works have shown that center cities and their suburbs share an enduring economic bond (Post 2002; Voitch 1998; Ledebur and Barnes 1992). For example, changes in center city per capital income has been positively and significantly related to changes in suburban per capita income and this relationship remains strong even after controlling for the impact of the state economy (Post 2002).

While "economy of scale" and "spillover" are just a few examples of regional issues and problems, the political fragmentation of metropolitan areas makes it essential to deal with regional problems using a regional approach (Rusk 1995; Downs 1994). In this sense, the need for regional approaches to economic development policy as well as the general public policy problems of local government has been a major challenge for policy makers at the local level over the past few decades (Park 2005). However, it has also become common knowledge that collaborative efforts provide a way to confront this dilemma and address the externalities. In fact, there has been considerable success on this front through targeted collective efforts such as intergovernmental agreements (Post 2002), creation of special districts (McCabe 2000; 2004) and regional partnerships among local governments in a metropolitan area (Olberding 2002, Feiock, Steinacker, and Park 2009). These phenomena imply that in complex local public

economies numerous voluntary associations of local governments and officials as well as citizen associations that transcend local boundaries are possible (Oakerson 1999).

One notable thing for the past few decades is that unlike many economic development policy tools that count on government activities for promoting economic well-being, a "new wave" has been extensively used in the economic development areas (Clarke and Saiz 1996; Clarke and Gaile 1992). This "new wave" is characterized not by the type of economic development policy, but rather by the type of economic development organization (Olberding 2002). The strategy of this wave is "to find new institutional and organizational arrangements with sufficient scope, responsiveness, and flexibility to provide the foundation for economic development" (Clarke and Saiz 1996, p543). An example of this strategy is regional partnership for economic development in which local government officials, often with assistance from business leaders and citizens, work across jurisdictional lines to enhance the economic development of an entire region (Olberding 2002). Supporters view that these innovative organizations are more flexible and versatile than traditional government agencies in that they allow for better adjustment to economic environmental changes based on frequent evaluations as well as an emphasis on specialization and experimentation (Eisinger 1988). In addition, advocates assert that this partnership approach is well-suited for the economic development policy arena which is "characterized by non-elected public and private actors as well as organizations and partnership arrangements that cannot be labeled as belonging either to the public or private sector (Clarke and Saiz 1996).

Then, under what circumstances can a metropolitan area successfully form and maintain a regional partnership? Regional partnerships are basically organizations that are formed by agreements among multilateral parties, which require a substantial amount of time and effort in coordinating activities toward consensus on a plan of action. The nature of regional partnerships requiring both coordination and cooperation among a large number of potential participants in a competitive environment constitutes collective action problems under complexity and uncertainty. In this sense, we need to discuss more about the nature of collective action problems, especially in the metropolitan governance context.

2.5 Collective Action and Regional Governance

Collective action problems occur when the coordination and cooperation of two of more local governments are required to accomplish a desirable outcome. Collective action begins with the recognition of interdependency among local governments in which the contribution or defection of one affects the actions of others, thus implying a strategic interaction. This strategic interaction among actors becomes more complicated and uncertain as the number of actors, local jurisdictions in particular, increases in metropolitan areas. The problem occurs when local governments, pursuing an outcome that maximizes it own welfare, will not augment the aggregate benefits of the whole region, which eventually leads to an inferior outcome (Andrew 2006).

This implies that interactions among local jurisdictions include both cooperation and competition. And inasmuch as decentralized decision making can generate collaborative regional solutions, it also might lead to non-cooperation and destructive development competition. These collaborative regional governance strategies can be successfully employed only when competitive perceptions and motivations are overcome (Gordon 2007). However, even without the existence of collaborative norms, local governments sometimes can create desirable outcomes from collaboration if expected benefits are large enough to outweigh the costs resulting from uncertainty. Therefore, collaborative solutions are not necessarily associated with normative values among potential participants. Rather, collaboration can be attractive strategies as long as local governments continue perceiving that coordination and cooperation make them better in a secure manner. Here, institutional arrangements essentially play an important role in making collaboration attractive by providing specific rules about how the negotiation and bargaining process for collective outcomes should be organized, how different incidences and responsibilities should be allocated to each participants, how those once-agreed upon rules are implemented and enforced, and so on. In this sense, the metropolitan governance discussed in the previous section can be conceptualized as resolving collective action problems, setting constraints that help participants avoid the negative effects of collective action, enabling social actors to interact collectively to create beneficial social outcomes, and reconciling rationality at the individual level with rationality at the collective level (Andrew 2006).

At the individual level, the problem of collective action has been characterized as the "prisoners' dilemma" (Dawes 1975; Axelrod 1984), the "tragedy of commons" (Hardin 1968; Ostrom 1990), and the "paradox of rationality and cooperation" (Campbell 1985). These works point out a similar implication that individual rational reasoning leads to collectively irrational outcomes rather than greater social reward (Pareto optimality). The problem of public good provision, another example of a collective action situation, arises when individuals cannot be excluded from enjoying the benefits of public goods once goods and services are produced and, thus, have little incentive to voluntarily contribute to the joint provision. Since motivations to free-ride are prominent across actors, no one is willing to contribute and public goods will not be provided.

Although the same implication can be found at the organizational level including situations where local jurisdictions formally or informally attempt to establish relationships with other jurisdictions, the analysis of collective action at the organizational level often becomes much more complicated by the diverse and conflicting interests among actors involved. That is, an aggregation of the collective preference among actors including elected and appointed officials, local constituents, local businesses, and so on should be achieved prior to addressing organizational level collective action. However, even consensual preferences within organizations are not represented in a way that constituents want since elected and appointed officials may exploit their power to develop their own agenda deviating from those of their constituents. Although this is not necessarily bad in that selective incentives still can be channeled into an entrepreneurial leadership role in promoting region-wide collective action through interactions with government officials in other local jurisdictions, it adds much complexity and uncertainty around establishing collaborative policies. Therefore, selective incentives of participating actors also should be a major consideration in understanding collective action at the organizational level.

Since the seminal works by Arrow (1951) and Olson (1965), many contemporary urban studies have applied the problems of collective action and collective decision-making to the issues in metropolitan areas by emphasizing the roles of rational action and its interactions. This stream of work is referred to as the *Institutional Collective Action* framework, which emphasizes institutions as a solution to collective problems in metropolitan areas (Feiock 2004). This framework basically recognizes the competitive nature of interlocal relations involved in

collective action situations by relying on individual level collective action theories that suggest the emergence of voluntary self-organizing cooperation among participants (Ostrom 1990; 1994). It also provides a framework that investigates how both the independence and interdependence of local jurisdictions affect their tendency to forge cooperative and competitive "adversarial cooperation" relationships with others by examining the fundamental role of institutions and the mechanisms for institutional change (Andrew 2006).

2.6 Institutional Collective Action

The Institutional Collective Action approach applies theories of collective action initially developed to explain individual behavior to institutionally defined composite actors such as local governments or government agencies (Feiock and Scholz 2009). Theories of institutional collective action make the explicit assumption that the externalities of choices in fragmented systems in which decisions are made by one independent formal authority do not consider the benefits and costs that these decisions impose on the constituencies and policy outcomes of concern to other authorities (Feiock and Scholz 2009). Theories of institutional collective action argue that efficiency at the collective level can be obtained only from an outcome of individual self-interest within a structure of formal authority. In this regard, theories of institutional collective action investigate factors and mechanisms that induce local governments to overcome these collective action problems by coordinating activities that enhance the welfare of the entire region (Park 2005). And, theories also attempt to explain how local governments might be able to achieve an effective form of self-governing and manage their relationships despite the obstacles to the collective provision of public goods and services.

In fact, theories of institutional collective action view formal and informal institutions as the building block or relational "glue" that binds institutionally fragmented localities (Feiock 2004). As a set of rules governing behaviors, institutional arrangements can be regarded as a problem of institutional collective action. Local governments in their attempt to create interlocal arrangements to specify their transactions confront a greater burden in designing a set of rules consistent with multiple and often conflicting preferences (Andrew 2006). The difficulty is that those rules do not emerge from a simple process. Rather, to establish a set of rules generally involves many complicated sub-problems, both ex-ante and ex-post. First, the important question is how local governments can organize themselves to receive collective benefits by

overcoming credible commitment problems. By taking more concrete actions, individual jurisdictions demonstrate their willingness to be sincere. For example, in attempt to develop a regional level plan of action, most local governments in collaboration can align their local level rules with upper level rules. Then, established upper level rules, in turn, can constrain the authorized actions available to individual local governments. This may be prone to be collapse without external coercion. However, metropolitan governance based on a self-organized group of independent municipalities also can solve the credible commitment without external coercion. For example, informal social institutions can breed collaborative behavior by internalizing norms such as honesty, reciprocity, caring about reputation. However, the dilemma of the credible commitment problem still remains unresolved since even if one central actor proposes a set of rules to ensure compliance, the efforts to provide this new set of rules would be meaningless unless the actors could commit themselves to observe the rules. Unless the monitoring problem can be solved, credible commitment cannot be addressed (Ostrom 1990). Therefore, second, credible commitment problems are directly associated with the problem of mutual monitoring.

The dilemma comes from the fact that any rational actors would not track whether others comply with the set of rules since there is nothing to be gained by monitoring the behavior of other actors on behalf of collective interests. Although entire metropolitan systems would be better off by closely monitoring and exercising sanctions to the non-cooperators, it might be simply better for an individual actor to remain passive and free-ride on others who monitor potential defectors. Therefore, the problem here is how a group of actors engages in mutual monitoring since without monitoring there is no credible commitment and without credible commitment, to propose new rules becomes pointless (Ostrom 1990). It has been suggested that repeated interaction between localities can enhance mutual monitoring in that repeatedly-played game builds reputation and is likely to foster a higher level of trust. Then, sharing important socioeconomic and cultural characteristics may decrease the uncertainty of interaction, which eventually leads to an increase in mutual monitoring. This also implies that the decisions and actions of local jurisdictions under repeated interaction become more and more interdependent and such interdependent relationships could be important assets to reduce the costs of exchange, to promote the development of collaborative experiences, and to bridge information to other localities or even third parties.

In theories of institutional collective action, many complicated sub-problems, both ex-ante and ex-post, of interaction among local jurisdictions are viewed as transaction costs of exchange. Cooperation is secured by defining the obligations, rewards, and penalties imposed on participating parties (Milgrom and Roberts 1992). However, incomplete information about one or more of the conditions for contractual situations introduces risk and, thus, transaction costs for potential arrangements. Although information mitigates the costs of uncertainty, obtaining it can be costly. In this sense, the structure of institutional arrangements can play a crucial role in reducing the risks of incoordination, inequitable divisions or defection by making information public (Maser 1998). Stability, decisiveness, responsiveness, and efficiency are enhanced by procedural safeguards and interlocal relationships that reduce uncertainty (Heckathorn and Maser 1987).

Even if the problem of information costs is addressed, collaboration is still difficult to achieve due to coordination problems. That is, potential joint gains do not guarantee that cooperative relationships will be established (Riker and Sened 1991). Here, the more difficult problem of division among actors emerges when parties have conflicting interests and require concession rationally through negotiation that provides fairness and equity in allocating benefits and costs (Heckathorn and Maser 1987). Local governments attempt to bargain the terms of interlocal contracts in light of the information they have available (Maser 1998). Therefore, the resulting governance structure is the product of a series of negotiated agreements over governance arrangements and substantive benefits. Rather than counting on centralized solutions, local governments negotiate the tools and strategies to produce desirable outcomes, the specified obligations of the participants, and the timing and duration of the agreement (Park 2005). This negotiation and bargaining process is usually tedious, time-consuming, easy to fail, and, thus costly.

Even when bargaining costs are low and the formation of collaboration is successful, enforcement problems might make collaboration difficult to sustain. Defection always tends to occur when enforcement by one or more of the actors has been inconsistent. Thus, enforcement also will be costly unless there are ex-post credible commitments by the participating actors to not defect. Especially, when third party enforcement is not feasible, collaborative outcome must have an individual rationality to assure an efficient agreement and this is largely dependent on

the commitment of the participants to each other and the collective goals. And the success of this mechanism relies on how efficiently actors can enforce the process in a self-organizing way.

In this regard, theories of institutional collective action systematically capture the conditions under which a self-organizing community can achieve collectively desirable outcomes. Theories of institutional collective action predict that the emergence of collaborative activities will be a function of the expected gains from collaboration and the costs that deter cooperation among players. In other words, despite their substantial benefits once obtained, collaborative approaches are difficult to form and sustain due to their complexity and uncertainty. Theories of institutional collective action further attempt to explain this complexity and uncertainty by specifying and matching a variety of transaction costs involved in collective action problems to certain situations. And they view that various types of regional governance mechanisms as institutional arrangements playing a critical role in addressing complexity and uncertainty by generally reducing transaction costs in many problems.

2.7 Public Good Provision and Game Theory

Focusing on individual action and its motivation, the game theoretic approach provides an insightful explanation for the success or collapse of collective action. Assuming that actors are motivated by rational calculation of benefits and costs, a game theoretic approach views the emergence of collective action as determined by strategic decision making of participants and their interactions. Strategic interaction implies that actors are aware of their interdependence and that in arriving at their own choices each will try to anticipate the choices of others, knowing that they, in turn, will do the same (Scharpf 2001). This implies that the micro level decisions of individuals ultimately determine the overall configuration of collective action. Individual participants will cooperate as long as their political or economic gains are substantial. By the same token, actors will decide not to cooperate if they contemplate that being a free-rider will turn out to be more beneficial. Therefore, successful collective action critically depends upon the benefits of cooperation outweighing the costs of monitoring individual compliance with group rules or norms (Ostrom 1990).

The simplest version of a two-person prisoners' dilemma illustrates why a cooperation strategy among players is difficult to sustain. The basic dilemma in this situation is that actors are motivated toward mutual defection, yet the greater social reward (Pareto optimality) is

obtained though mutual cooperation. Both actors will defect since in any situation defecting seems to be more beneficial than cooperating.

The public good provision game carries similar implications regarding collective action problems by its setting to *n*-person environment. Due to its non-excludability from created benefits, actors tend to free-ride and the game will lead to under-provision of public goods (Issac and Walker 1988). In the setting of fragmented local jurisdictions, collaborative efforts are difficult to sustain as well for numerous reasons: competitive motivations, the desire to retain jurisdictional boundaries, unequal resource endowments and needs, inequities in negotiating and bargaining positions, a low level of credibility, uncertain environments around collaboration, and numerous types of transaction costs. These might reduce the chance of regional partnerships for economic development to form and sustain.

However, the empirical observations that actors in most diverse social settings contribute anything at all has been a major challenge for game theoretic approach to make predictions based on assumption of "self-interests" motivation (Friesema 1970; Ostrom, Bish and Ostrom 1988). Not only game experiment settings but also governance issues among fragmented local governments demonstrate the signification level of cooperation based on voluntary contributions (Bennett and Nathanson 1997; Raasch and Brooks 1995; Grell and Gappert 1993; Herschberg, Magidson and Wernecke 1992; Coe 1992; Higgins 1992). To address the discrepancy between theory predictions and empirical observations, public good provision game literatures suggest modified explanations based on two different approaches: allowing diverse motivations (Andreoni 1995) and introducing the role of institutions and game environments. The first approach attempts to incorporate the impact of other motivations than "self-interest" such as altruism in the standard explanation. For example, actors may possess altruism by caring about the level of public goods or exercise "warm glow" by simply enjoying contribution (Andreoni 1995). And the assumptions of "reciprocity" that actors care more about reciprocity and "inequality aversion" that an actor will give a little less than others so that he or she makes a little more are other ways of reflecting a more realistic aspect of actors' motivations.

On the other hand, second approach takes the role of institutions and game environments more seriously. For instance, Axelord (1984) and Taylor (1987) argue that a player is more likely to choose cooperative strategies confronting the repetition of games (Feiock 2007). In fact, this particular institutional mechanism provides a rationale for players to choose cooperative

strategies. Under the iterated prisoners' dilemma, cooperation based on reciprocity prevails. Fixed geographic borders imply that neighboring jurisdictions are likely to be repeated players over various policy arenas. Under this situation, past interactions among participants affect present and future cooperation because actors consider their reputation (Andreoni and Miller 1993). On the other hand, the opportunity to communicate among players also increases the level of cooperation. Face-to-face communication or simple "cheap talk" can induce cooperation through exchange of commitments among actors. Communication enhances the chance that game players create trust and cooperative norms. Once created, cooperative norms are critical for shifting from competitive to cooperative behavior. Norms are clusters of expectations, or conditional preferences which thus depend on the preferences of others. Cooperative norms are also a sanction that enhances commitment and facilitates cooperation of players (Axelord 1997). Considering reputation, communication, trust, and norms more seriously, the evolutionary game approach seems to do better job of explaining the how collective action occurs and why actors build and sustain cooperation over time (Ostrom 2000). In the regional partnership context, a tradition of regional approach among local jurisdictions is more likely to create another collaborative regional strategy (Olberding 2002; Heath and Henegar 1994; Grell and Gappert 1993).

More realistic assumptions about a player's heterogeneity also allow the emergence of entrepreneurial leadership which potentially increases cooperative strategies in collective action situations. When a leading actor believes that the return from the collaborative effort will outweigh its costs, it will than undertake the effort to create common goals and objectives and to develop action plans. Leading actors might inherently possess superior power or resources than the rest of group. Or actors with a risk-taking attitude might attempt to exploit the opportunity around overcoming collective action problems for economic development. In these cases, the emergence of leadership easily constructs the tipping-point, which reduces uncertainty and the free-rider problem. Therefore, the entrepreneurship of certain players provides leadership and management to ensure a supply of public goods without the vagaries of constant attempts at mass movements (Aylward 2005).

Diverse approaches dealing with game variations discussed above attempt to provide a theoretical explanation of how self-organizing collaboration emerges among self-interest actors. Here, institutional arrangements are considered to play a critical role in formulating and

maintaining collaborative solutions. Institutional arrangements that define game situations such as repeated interactions, opportunities to communicate, cumulated cooperative norms, and incentives to alter payoffs structure, can shape the outcomes of games differently. Metropolitan governance as an institutional arrangement essentially provides rules that govern interactions of local jurisdictions within a metropolitan area in the production and provision of collective goods. In this sense, metropolitan governance is a mechanism that directs local efforts to solve the puzzle across jurisdictional boundaries into the best way by altering existing institutional arrangements or creating new ones. Depending on the dilemma which local governments in the region confront, they tend to create a wide variety of alternative institutional arrangements.

On the other hand, like many other institutional arrangements, metropolitan governance mechanisms also should be understand as both the medium and the outcome of the practices which constitutes social systems (Giddens 1984). In fact, the action of the players and the structure of the game interact with each other. In other words, while local governments act as rational actors to create and use a set of rules best governing collective behaviors, those created and used sets of rules construct a working framework for actions as part of the governing process. Especially, the game theoretic perspective that considers game outcomes as results of rational decision-making among players fails to capture the impact of social relations by assuming the independence of participants. However, social networks structure in which actors are embedded, in fact, can act as institutional arrangements that affect the decision of players. This implies that social network structure could reinforce governance mechanisms by reducing credible commitment problems.

2.8 Social Networks Perspective on Collective Action

A social network perspective offers the foundation necessary to study actors involved from a relational and structural view (Garcia 2006). Actors and their actions are considered as interdependent rather than independent. Relational ties among actors are channels to transmit the flow of resources, either material or non-material. Therefore, the structure of social networks is essential to understand the opportunities and restrictions of actors, in accordance with their positions in them. In particular, social relations affect actors' decisions and help them overcome collective action problems. For example, when actors are tightly linked with each other, deviation from collaborative efforts is less likely to occur because defection is more likely to be

detected. Players concerned with building a reputation within the group also choose cooperative strategies more frequently. This implies that networks of relationships provide a critical mechanism for overcoming various barriers to collective action so that they could succeed in public good provision.

In general, two different perspectives on social networks approach have been advanced (Feiock and Scholz 2007; Feiock 2007; Scholz, Berardo, and Kile 2008): One emphasizes tightly-clustered or strong-tie relationships enhancing the credibility of commitments among players. The other emphasizes the role of extensive weak-tie relationships linking players with shared information required to coordinate collective decisions.

A clustered network structure can transform zero-sum games into non-zero sum games because information about players especially regarding previous decisions is relatively open to network participants. This reduces the possibility of breaking trust established among participants. A densely-populated network provides an extensive monitoring mechanism and facilitates mutual reciprocity, trust, and conformance to the rules of the game (Coleman 1988). Consideration of reputation, communication, trust, and social norms, makes players more likely to build and sustain cooperation. Social capital theorists argue that cooperative norms, which are the product of repeated interactions, turn into "social capital" and cumulated "social capital," in turn, makes collaborative works easier and facilitates economic and community development (Ostrom and Ahn 2002; Ostrom 2000; Putnam 2000). Therefore, "social capital" refers to features of social organization, such as networks, norms, and trust, which facilitate coordination and cooperation for mutual benefit (Garcia 2006). In doing so, social capital lessens transaction costs and institutional friction, which allows participants to overcome social dilemmas. The productivity of social capital makes possible the achievement of certain ends that would not be attainable in its absence (Coleman 1988). Moreover, social capital is seen, at present, as a critical factor for economic development at any level, which helps to formulate new strategies for development (Garcia 2006). In this sense, a highly-clustered network has the ability to impose constraints on defection and opportunism so that it increases the stability of a regional governance structure (Feiock, Steinacker and Park 2009).

On the other hand, the emergence of strategic actors in weak-tie network structures also provides the potential to improve cooperative strategies among actors in collective action situations by redirecting information and resources available. Without an emotional attachment

and previous interaction, each player might build up reciprocity and trust with only a limited number of colleagues. In practical terms, constraints on resources and information prevent players from investigating all the social relations surrounding them. Therefore, the existence of "structural holes," and therefore bridges and weak-ties, implies a potential for some actors as a characteristic of the structure of the network (Burt 1992). This type of social structure can create for certain actors or groups, occupying a certain position in the structure opportunity to pursue their ends (Garcia 2006). On a system level, some actors' opportunities could improve the welfare of society as a whole by being better connected with each other and better provided with a broader set of useful information and possible gains from interaction by network entrepreneurs. In this sense, the existence of players filling the "structural holes" reduces uncertainty around coalition building and free-rider problems. As an example, Feiock, Park and Steinacker (2009) identify situations where a multilateral solution might provide more effective policy coordination, yet, absent an existing organization or entrepreneur, local governments confront a free-rider problem in constructing the organization. In this sense, a social network structure among actors, especially either a tightly-clustered structure or an information-bridging structure, or both, can create collaborative solutions.

CHAPTER 3
THEORETICAL FRAMEWORK

3.1 Overview of Collective Action Theories

This dissertation builds upon two major streams of thought concerning collective action dilemmas; one investigates how self-interested participants seeking political or economic benefits from being a free-rider may or may not create self-organizing solutions to overcome collective action problems by focusing mostly on actors' competitive motivations and their strategic interactions. The other provides a conceptual framework that shows how both the independence and interdependence of actors, sometimes beyond individual level, affect their tendencies to forge collaborative solutions by putting more emphasis on the context of collective action dilemmas and the fundamental role of institutions.

Although both approaches are not mutually exclusive, there have been distinctions between the two approaches in their applicable implications. While minimizing the contextual variation of collective action situations, the former attempts to highlight the consequences of the rational calculation of costs and benefits conducted by individual participants. In other words, this approach emphasizes the fact that complexity and uncertainty around collective action resulting from strategic interaction may generate socially undesirable outcomes. Strategic interaction implies that actors are aware of their interdependence in decision making and that in arriving at their own choices each will try to anticipate the choices of others, knowing that they, in turn, will do the same (Scharpf 2001). Relying on micro level analysis of individual decision making, this approach provides useful insights for understanding the relationship between individual behaviors and the overall configuration of collective action. On the other hand, to better explain contextual and empirical variation in diverse settings, the latter attempts to apply theories of collective action to institutionally defined composite actors and investigate factors and mechanisms that induce these actors to overcome collective action problems by coordinating activities that enhance the welfare of the entire system. While not disregarding the importance of the expected gains from collaboration and the costs that deter cooperation among players, this approach views that formal and informal institutions play an important role in coordinating multiple and often conflicting preferences both within and across entities. In other words, the

second approach attempts to systematically capture the origin of complexity and uncertainty deterring collaborative solutions and points out various types of governance mechanisms as institutional arrangements to reduce the risks caused by complexity and uncertainty in many collective situations.

This dissertation builds upon recognition of the importance of both streams of thought; while collective action problems basically should be understood as a process of rational self-interested actors achieving common goals, its "undersocialized" perspective should be overcome by taking contextual variation in collective situations fully into account. In other words, not to mention the rational calculation of costs and benefits of collective action, how independence and interdependence of actors forge collaboration, should be included in this conceptualization and empirical study of regional governance.

3.1.1 The Logic of Collective Action

Selective benefits belonging solely to individual participants can be powerful disincentives to successful collective action. This implies that common goals among participating members are not sufficient to attract and keep cooperation. Olson (1965) argued that while small-size groups have the ability to enforce agreements through social pressure, larger ones are destined to fail due to lack of this mechanism. In other words, small-size groups have the advantage of lower monitoring costs and less shirking behaviors. The transaction costs involved in collective action problems increase with the number of actors included in the group. When applied to collective action in the context of regional governance, group size effect has been conceptualized as "group size" (Post 2002; Park 2005) and "fragmentation" (Olberding 2002; Rawlings 2003).

On the other hand, group size is not the only determinant of the level of collaboration. Here, group composition is also a major consideration in predicting the configuration of collective action: does the existence of dominant players enhance or dispirit the likelihood of collaboration? Or does group homogeneity necessarily improve credible commitments leading ultimately to better collaboration? While answers may depend on the particular settings being studied, theories and empirical evidence on these issues, in fact, are mixed. For example, there has been disagreement in the literature on metropolitan governance about the impact of central city dominance. Public choice theories have the view that metropolitan areas that are heavily

dependent upon their central cities are more likely to collaborate partly because smaller jurisdictions have few alternatives other than seeking cooperation with central cities to provide public services, due to economy of scale. Some empirical studies find that areas with dominant actors are more likely to have collaborative regional solutions than their metropolitan counterparts with a more independent polycentric system (Foster 1997). To the contrary, a regionalist approach would consider that central city dominance discourages regional collaboration. While there have generally been conflicting interests between central cities and their suburban jurisdictions such as poverty, minorities issues, crime, and so on, the social problems that peripheral actors want to address are more likely to be neglected when central cities dominate their metropolitan area and try to provide most needed services for themselves, obviating the need to collaborate with others (Rawlings 2003).

Different implications for collective action theories are present even for a seemingly obvious hypothesis-- group size effect. Since Olson (1965), the degree of fragmentation (group size) has mostly been viewed as an impediment to successful collective action (Olberding 2002). However, Parks and Oakersons (1989) suggest that in many instances highly fragmented metropolitan areas have many horizontal and vertical arrangements or create hierarchically nested arrangements. According to public choice theories, this is possible partly because having more jurisdictions increases the need for a greater number of differentiated public goods and services, especially when they are provided only through collaboration. This implies that the relationship between fragmentation and collaboration may not be linear. Rather, the level of collaboration is a function of both potential benefits and transaction costs. Therefore, as Olson pointed out, fragmentation is less likely to lead to collaboration due to the larger transaction costs involved, yet the opposite is possible if gains from collaboration outweigh costs from conflicting interests.

Again, all the answers depend on the particular settings being studied. At the same time, however, all of the mixed theoretical predictions and empirical results on collective action problems suggest that we need to begin with a fundamental theoretical frame minimizing contextual variations to better understand the nature of collective action, especially relationships among levels of collaboration, degrees of fragmentation, the role of dominant actors, and the benefits/costs structure. In this vein, the application of simple public good provision game to regional governance issues is expected to provide a meaningful explanation of the logic of

collective action in a more straightforward manner. Consideration of the contextual or relational aspects of collective action could be added after understanding the nature of collective action becomes obvious and satisfactory.

Focusing on individual action and its motivation, the concept of public good provision game investigates the conditions for the success or collapse of collective action. Assuming that actors are motivated by rational calculation of benefits and costs, it considers the emergence of collective action as determined by the strategic decision making of participants and their interactions. Strategic interaction implies that actors are aware of their interdependence and that in arriving at their own choices each will try to anticipate the choices of others, knowing that they, in turn, will do the same (Scharpf 2001). This implies that successful collective action critically depends upon the benefits of cooperation outweighing the costs of coordinating conflicting interests and monitoring individual compliance with collaborative rules or norms (Ostrom 1990).

When applied to collective action in the context of regional governance, group composition effect has two components: group size and degree of fragmentation (the role of dominant players).

3.1.2 Group Composition Effect: Group Size and Degree of Fragmentation

Traditional public good provision game views that the larger the group, the more difficult it is to form (Olson 1965). One simple explanation of this is that the probability that one actor can make a pivotal change in the outcome of the overall decision making becomes smaller as the group size gets larger. This actor does not have to bother in many instances and tends to free-ride. The formal model which will be developed in the subsequent chapter supports this kind of conjecture by demonstrating that the marginal probability that one actor can alter the whole picture decreases with the increase in number of participants. Another possible explanation is that transaction costs, in particular, increase with the number of actors included in the group (Williamson 1975). The problem of transaction costs becomes even more serious if we consider less homogeneous actors in the group since their conflicting interests are expected to increase information, negotiation, and enforcement costs. This increases the uncertainty around building up the successful groups by requiring a higher level of credible commitments. Therefore, in the context of regional governance, when there are many players in a metropolitan area, a coalition

for public good provision, in principle, is less likely to be formed (Olberding 2002; Rawlings 2003; Post 2002; Park 2005).

On the other hand, recent extensions of public good provision game literature are more interested in examining how outcomes of original models change in different settings. A large body of literatures in this stream focuses on investigating the role of institutions and game environment. While reputation, trust, and norms in a repeated setting, communication, and recognition of interdependence and embeddedness play a great role in building up collaborative solutions among participants, this dissertation begins with a relatively simple and less deviating extension from the original discussion by allowing actor heterogeneity. Taking actor heterogeneity into account in our analysis is particularly important in the context of metropolitan governance since each game participant is by no means identical in every aspect. In other words, since local jurisdictions in a metropolitan area differ in various aspects such as population, economic size, social position, and so on, actors are more likely to have different policy preferences and even conflicting interests. For example, central cities and their suburban areas usually demonstrate a great disparity in their socioeconomic status. This implies that transaction costs become even larger in cases of less homogeneous actors in the group since their conflicting interests are expected to increase information, negotiation, and enforcement costs. In this case, addressing collective action problems turns out to be much more complicated. In this sense, while requiring more sophisticated analysis, introducing actor heterogeneity captures a more realistic aspect of collective action dilemmas in metropolitan governance.

Then, does actor heterogeneity necessarily impede the development of collaborative solutions among game participants? Among the various impacts of actor heterogeneity, here this dissertation is particularly interested in investigating the role of entrepreneurial leadership, potentially encouraging cooperative strategies in collective action situations. Multilateral cooperative solutions might not emerge without some individual initiatives especially when there exists a great level of uncertainty about the outcomes. In this sense, collaboration among local jurisdictions is often the result of entrepreneurial leaders who are willing to take advantage of a specific opportunity (Schneider, Teske, and Mintrom 1995). Motivated by personal gains, these actors could lessen the transaction costs associated with coalition formation and policy implementation. In so doing, these actors perceive opportunities for policy change, advocate for the experiments, and transform policy arenas. While entrepreneurial leadership can emerge in

various ways, these activities are not confined to individuals who are innovative and exploratory. Rather, organizations and jurisdictions, as a whole, often serve as entrepreneurial leaders in group formation and policy development. Here, this dissertation research particularly focuses on the role of the dominant player in the group. Does the existence of dominant players increase or decrease the likelihood of collaboration?

Back to our discussion of the public good provision game, where a leading actor perceives that a potential return from the collaborative effort outweighs its costs, he or she will undertake the effort to create common goals and objectives and to develop action plans. Leading actors with inherently superior power and resources over others or with a risk-taking attitude may explore the numerous opportunities to overcome collective action problem for economic development. Furthermore, the emergence of leadership easily reaches the tipping-point by providing leadership and management to ensure a supply of public goods, especially when the issues of uncertainty and the free-rider problem are prevailing. Public choice theories mostly support this argument in that whereas smaller actors would play only a limited role, the commitment of larger players is essential in especially large-scale collaboration. However, this is not always the case. Polycentric decision making systems often lead to greater levels of collaboration by allowing more flexible solutions. This is generally possible when 1) the participation requirement is not strong so that even a coalition among smaller actors makes a difference, 2) competitive motivation among actors and actor's belief of being a significant player make synergic impact toward collaboration, or 3) smaller actors want to address social problems more directly, suspecting that their voices are likely to be disregarded in the process of building collaboration. All of these scenarios can describe a situation where the role of leading actors is less necessary especially if there is less uncertainty around collective action.

Finally, benefits and costs structure matters in collective action problems. By its definition, theories of collective action investigate how rational calculation of benefits and costs conducted by individual participants may or may not create self-organizing solutions to overcome collective action problems. According to this perspective, payoffs need to be high in order for collective action to be feasible (Begossi 1998; Warren and Pinkston 1998). This also implies that the greater the underlying economic problems of a region and the larger the aggregate gains from the collaborative development, the greater the likelihood of establishing a collaborative arrangement to do so (Lubell et al. 2002; Ostrom, Gardner, and Walker 1994;

Libecap 1989). There has been an agreement that collaborative strategies can be successfully employed when competitive perceptions and motivations are overcome. Various institutionally designed mechanisms may induce actors to overcome collective action problems by allowing an opportunity to institutionalize reputation, trust, and social norms among participants. However, even without the presence of collaborative norms, local governments sometimes can create desirable outcomes from collaboration as long as expected benefits are large enough to outweigh the costs resulting from uncertainty. This means that collaborative solutions are not necessarily associated with normative values among potential participants at the beginning. Rather, actors' perceptions about potential benefits and transaction costs of collaboration play a critical role in initiating a collective action approach. Studies of many variations of prisoners' dilemma game also show that payoff structure basically determines which game actors are supposed to play; it could be a zero-sum prisoners' dilemma game or an assurance game basically depending on payoff structures (Aylward 2005). Both internal and external institutional mechanisms, which can alter benefits/costs structures, contribute to making collaborative strategies attractive by transforming a game setting prisoners' dilemma to an assurance game.

3.1.3 Institutional Collective Action

Extending from the original theory of collective action, **the** Institutional Collective Action (ICA) framework focuses more on the role of institutional mechanisms in explaining how self-interest actors manage to overcome collective action dilemmas. This approach is motivated by the fact that 1) theoretically, the rational choice approach depends heavily upon an unrealistic assumption that actors are supposed to play the game under exogenously-given settings, and 2) therefore, empirically, the level of collaboration observed in diverse settings is much higher than the theory once predicted.

Institutional collective action arises when the efforts of two or more actors are needed to achieve common goals. This framework investigates the mechanisms that could explain factors motivating actors overcoming defined problems and coordinating activities that improve the welfare of an entire group of actors. However, this frame emphasizes the application of theories of collective action initially developed to explain the individual behavior to institutionally-defined composite actors such as local governments or government agencies (Feiock and Scholz 2009). Especially, institutional collective action framework makes an explicit assumption that

the externalities of choices in fragmented systems in which decisions are made by one independent formal authority do not consider the benefits and costs that these decisions impose on the constituencies as well as the policy outcomes of concern to other authorities (Feiock and Scholz 2009). Therefore, there is concern regarding the underlying logics behind the willingness of players to exercise effective forms of governance and maintain relationships with others despite the barriers to the joint provision of public goods.

While attempting to create interlocal arrangements, local governments specify their transactions confronting a greater burden in designing a set of rules consistent with multiple and often conflicting preferences (Andrew 2006). The difficulty is that those rules do not emerge from a simple process. Rather, to establish a set of rules generally involves many complicated sub-problems, both ex-ante and ex-post. First, an important issue is how local governments can organize themselves to create the collective benefits by overcoming credible commitment problem. Second, the dilemma of the credible commitment problem still remains unresolved without mutual monitoring. Therefore, a dilemma arises when actors engage in mutual monitoring since without monitoring there is no credible commitment and without credible commitment, to propose new rules becomes pointless (Ostrom 1990). Here, theories of institutional collective action view formal and informal institutions as a major building block or relational "glue" that binds institutionally fragmented localities (Feiock 2004).

As one type of institution, it has been suggested that repeated interactions between localities can enhance mutual monitoring in that repeatedly-played games build reputation and are likely to foster a higher level of trust. Then, sharing important socioeconomic and cultural characteristics may decrease the uncertainty in interactions, which eventually may lead to an increase in mutual monitoring. This also implies that the decisions and actions of local jurisdictions under repeated interaction become more and more interdependent and such interdependent relationships could be important assets in reducing costs of exchange, promoting the development of collaborative experience, and bridging information to other localities or even third parties.

In addition, many complicated sub-problems, both ex-ante and ex-post, from interactions among local jurisdictions are viewed as transaction costs of the exchange in theories of institutional collective action. Cooperation is secured by defining the obligations, rewards, and penalties imposed on participating parties (Milgrom and Roberts 1992). However, incomplete

information about one or more of conditions for contractual situations introduces risk and, thus, transaction costs for potential arrangements. Even if the problem of information costs is addressed, collaboration is still difficult achieve due to coordination problems. That is, potential joint gains do not guarantee that cooperative relationships will be established (Riker and Sened 1991). In fact, the resulting governance structure is the product of a series of negotiated agreements over governance arrangements and substantive benefits. The negotiation and bargaining process is usually tedious, time-consuming, easy to fail, and, thus costly. Finally, even when bargaining costs are low and formation of collaboration is successful, enforcement problems might make collaboration difficult to sustain. Defection always tends to occur when enforcement by one or more actors has been inconsistent. Thus, enforcement also will be costly unless there are ex-post credible commitments by the participating actors not to defect. The success of this mechanism relies on how efficiently actors can enforce the process in a self-organizing way.

In this regard, theories of institutional collective action systematically capture the conditions under which a self-organizing community can achieve collectively desirable outcomes. Theories of institutional collective action predict that the emergence of collaborative activities, in principle, will be a function of the expected gains from collaboration and the costs that deter cooperation among players. On the other hand, an institutional collective action framework further attempts to explain this complexity and uncertainty by specifying and matching a variety of transaction costs involved in collective action problems to certain situation to situation. This framework also posits that various types of regional governance mechanism as institutional arrangements, play a critical role in addressing complexity and uncertainty by generally reducing transaction costs in many problems.

Discussion in the next section explains the origins of this complexity and uncertainty around collective action and develops general hypotheses regarding the determinants of regional collaboration based on institutional collective action framework.

3.2 Institutional Collective Action

3.2.1 Necessary Conditions for Collective Action: Demands for Collaboration

Collaboration occurs when actors perceive the potential benefits of cooperation and coordination. Especially, local jurisdictions anticipate addressing the problems of their own

social and economic struggles, positive and negative intergovernmental externalities, and duplication of policies from unnecessary competition while choosing collaborative strategies. The greater the embedded problems, the more benefits local governments can enjoy once collaboration turns out to be successful. For example, when a local jurisdiction does not have sufficient resources for the provision of public goods and services, it can take advantage of other local jurisdictions by creating common agendas for regional economic development. In particular, its own economic and fiscal stress is more likely to generate demands for collaboration among participants in order to share resources and achieve economy of scale. This implies that economic and demographic conditions affect the actors' consideration of regional collaboration as they create a great deal of demands.

First, demands for regional collaboration may be influenced by population changes. Growth rate in population is an important indicator for establishing suitable economic development strategies. Since decrease in population is more likely to result in reduction in tax bases, a limitation on budget control, and diseconomies of scale, it is generally considered as a challenge for local governments. Under fiscal pressure, local jurisdictions with a decrease or slow growth rate in population are more likely to seek external opportunities to create collaborative solutions. Second, economic growth is a more direct indicator of embedded economic problems with which local jurisdictions are confronted. Local governments with weak economic positions anticipate that by choosing collaborative strategies, they may be able to access the expertise and resources of neighboring jurisdictions so that they can achieve common goals for improving economic difficulties. Since the potential benefits from a regional approach may be greater in jurisdictions with more serious economic hardship, local governments with slow economic growth are likely to have a greater demand for collaboration.

On the other hand, stronger demands do not always lead to a greater chance of success in the regional approach. For example, although local governments with weak economic positions may be eager for external opportunities to create collaborative solutions, they possess an inherently weaker position in expertise and resources to pursue either individual or collaborative strategies for economic development. Therefore, their endowment is as important as their demands for economic development. Two or more actors may need each other to exchange insufficient resources and achieve economies of scale, yet it may be difficult to reach agreement

on most of the details especially if their interests are divergent and conflicting. These examples imply that we need to investigate the sufficient conditions for successful collaborative solutions.

3.2.2 Sufficient Conditions for Collective Action: Minimizing Transaction Costs

Based on the transaction costs argument, the institutional collective action framework (ICA) attempts to identify conditions under which autonomous local jurisdictions will have incentives to initiate policy coalitions with their neighboring governments. Again, collaboration among actors with individual incentives is plagued with many complicated sub-problems: incomplete information about one or more conditions for contractual situations make defining the obligations, rewards, and penalties imposed on participating parties difficult (information costs). Even with complete sets of information, the negotiation and bargaining process is usually tedious and time-consuming, thus, not necessarily ending up with successful outcomes (bargaining costs). Even if the bargaining process is addressed and initial formation of collaboration is successful, problems with an enforcing mechanism may make collaboration vulnerable (enforcement costs).

The extant literature on interlocal cooperation views that transaction costs generally become larger in cases of fewer homogeneous actors in the potential alliance since their conflicting interests are expected to increase information, negotiation, and enforcement costs. Divergent preferences within and across jurisdictions are perceived as the greatest barriers to interjurisdictional efforts to create collective outcomes (Feiock 2007). Homogeneity across jurisdictions, best captured by the degree of demographic homogeneity, may represent low political and economic dissents over certain policy issues. Homogeneity within jurisdictions is also important since aggregating and matching preferences might be difficult when communities share a minimal level of policy interests and individuals and sub-groups of actors pursue only their own selective incentives (Feiock 2007). In addition, extant literature on social network theory of homophily argues that political and economic similarity brings a cooperative strategy more easily since actors seek to forge relationships with others with whom they share similar attributes (Feiock, Steinacker and Park 2009; Ibarra 1992; Carley 1991).

In this sense, to account for contextual and relational elements of collective action, it is essential to understand the sufficient conditions for collaboration among local jurisdictions. These include characteristics of communities, the structure of local political institutions, and the

formal and informal network structures which determine the nature of transaction-- in particular, collective action.

Community Characteristics

Socioeconomic and political characteristics of metropolitan areas may shape preferences for collective goods differently since potential gains from collective actions could be divergent depending on these characteristics. However, socioeconomic and political factors determine transaction costs of collaboration as well.

Most of all, homogeneity in demographic and economic features among participating local jurisdictions is expected to bring common potential interests and policy preferences. Similar to individual collective action situations, homogeneity across jurisdictions is expected to signal potential common interests and service preferences. As pointed out earlier, homogeneity across jurisdictions substantially reduces uncertainty around information gathering, negotiation/bargaining, and enforcement. For example, public officials who are the bargaining agents for their jurisdictions recognize that counterparts in other governments representing similar constituencies understand their preferences better and indicate similar political and economic interests (Feiock 2007). This leads to a great reduction in information and bargaining costs. Homogeneity within community, not just between units, is also important since it reduces the chance that public officials deviate from citizens' collective preferences while negotiating collective action agreements. Interests are likely to be less uniform and it is more difficult to aggregate preferences and hold agents accountable in heterogeneous communities (Feiock 2007). In this sense, intrajurisdictional homogeneity is also expected to increase the likelihood of collaboration.

On the other hand, homogeneity is not the only determinant of successful partnership formation. The unique characteristics of a metropolitan area (community) -- facilitating or deterring collaborative approach such as state level rules, density of government, and so on-- can affect the likelihood that regional partnerships will be established.

Political Institutions

As discussed earlier, the institutional collective action (ICA) framework views formal and informal institutions as a major building block or relational "glue" that binds institutionally

fragmented localities (Feiock 2004). At the same time, however, institutions serve as constraints by defining and confining the behaviors of individual actors and their interaction. In other words, institutions should be associated with successful collaborative approaches since they can shape the incentive structures faced by the numerous actors involved. Transactional relationships surrounding collective action situations offer incentives for improved efficiency gains, yet may also provide actors involved with a chance to act in a opportunistic way. Certain types of political institutions can mitigate the risks of discrepancy between the collective level of policy preferences and the selective incentives of local government officials (Feiock, Jeoung, and Kim 2003). Especially, since many collaborative strategies are discussed, determined, and implemented by both appointed and elected officials throughout the policy making process, their political incentives have implications for their attitudes towards the level and timing of collective benefits and the willingness to enter into collaborative approaches.

In particular, the similarity of political institutions across government units in a region is expected to facilitate exchange because actors tend to cluster with others of similar values, norms, and belief characteristics (Carley 1991; Sabatier 1999). For instance, much of the local public administration literature suggests that professional city managers share a common set of training, experience, and work orientation that leads to common values and an emphasis on efficiency and professionalism that are reinforced by professional organizations in the field (Feiock, Jeong, and Kim 2003; Frederickson, Johnson and Wood 2004). Therefore, local leaders are expected to align with others with whom they share similar professional values.

Structure of Policy Networks

The last factor that the institutional collective action (ICA) framework emphasizes is the relational aspect of collective action at the regional level. Evidence from extant studies suggests that policy networks play significant roles in coordinating decision making among decentralized actors (Meier and O'Toole 2002; Provan and Milward 1995; Schneider et al. 2003). A contractual arrangement among local governments constitutes a macro-level regional governance structure that comprises a set of actors in a social network (Feiock 2007; Thurmaier and Wood, 2002). Embedded relationships with other local jurisdictions shape a regional network which establishes the reputation and reciprocity of information and resources based on the reliability and competencies of prospective partners over time (Gulati and Gargiulo 1999). Here, the

structure of relational arrangements among local jurisdictions plays an important role in reducing potential transaction costs by institutionalizing information-reaching mechanisms and the path of credible commitments among actors. Network structure, with the impact of fixed geographical locations among actors, transforms the behavioral tendency of actors from short-term opportunism to social norms based on reputation for reciprocity and trustworthiness in repeated game settings.

As one type of institutional arrangement mitigating the transaction costs of collective action, policy networks have been perceived to play two contrasting roles: while one emphasizes the mechanism of cooperation among tightly-clustered actors, the other focuses on an extensive process of coordination by linking diverse actors and enhancing shared information and resources among potential participants (Feiock and Scholz 2009; Feiock 2007; Scholz, Berardo, and Kile 2008).

Strong-tie arguments emphasize the advantage of a clustered network especially when there is a potential problem of free-ride by localities involved in the joint delivery of collective goods. Threats of shirking impose costs on those who have already invested resources, effort, and time in collective efforts (Feiock 2007). From the transaction cost perspective, a densely-clustered network reduces the cost of monitoring and enforcing the compliance of participants. Information on the efforts, contributions, and behaviors of a government can be made available to and sanctioned by potential partners. The signal of reputation often does more than compensate for incomplete information; reputation is a valuable social capital asset (Dixit 1996). If the forces of repetition and reputation are strong enough, local governments' own incentives ensure that they will not be tempted to defect from their commitments (Feiock 2007). Therefore, a densely-clustered network of intergovernmental relationships enhances social capital by facilitating reciprocity, trust, and commitment to the social norms (Coleman 1988). In this sense, cooperation is more likely to occur in densely-clustered networks.

In fact, it is important to note that network structure should be understood as both the medium and the outcome of collaboration among actors. A cumulated experience of cooperation among local governments breeds development of social network structures based on reciprocity norms that reduce the costs of joint action and build social capital. Then, overall social network structure based on dyadic interactions with other governments, in turn, affects present and future cooperation as repeated interactions reduce the effort required to put additional new activities in

place as partners develop norms, trust, and comfort working together over time (Gerber and Gibson 2005; Feiock 2007).

On the other hand, the weak-tie argument emphasizes the possibility of exploring a broader set of possible gains from other local governments by being connected to coordinators and unexploited partners. Information-bridging allows local governments to reap the advantage of innovation not available within a more densely-clustered network. At the system level, some actors' opportunities could improve the welfare of a society as a whole by being better connected with each other and better provided with a broader set of useful information and possible gains from interaction with network entrepreneurs. This idea builds on Burt's theory of "structural holes," which argues that ties that bridge structural holes are beneficial for the flow of information and reduce coordination/information costs (Burt 1992). In addition, since accurate information on opportunities for cooperation and who may be a good partner is necessary for local government units to collaborate, the value of a link might be particularly high if actors are not closely connected with each other (Feiock 2007; Burt 2005).

3.3 Social Networks Perspective

A social network perspective offers the foundation necessary to study actors involved from a relational and structural view (Garcia 2006). Actors and their actions are considered as interdependent rather than independent. Relational ties among actors are channels to transmit the flow of resources, either material or non-material. Therefore, the structure of social networks is essential to understand the opportunities and restrictions of actors, in accordance with their positions in them. In particular, social relations affect actor's decisions and help them overcome collective action problems. For example, when actors are tightly linked with each other, deviation from collaborative efforts is less likely to occur because defection is more likely to be detected. Players concerned with building a reputation within the group also choose cooperative strategies more frequently. This implies that networks of relationships provide a critical mechanism for overcoming various barriers to collective action so that they could succeed in public good provision.

In general, two different perspectives on the social networks approach have been advanced (Feiock and Scholz 2009; Feiock 2007; Scholz, Berardo, and Kile 2008): One emphasizes tightly-clustered or strong-tie relationships enhancing the credibility of commitments

among players. The other emphasizes the role of extensive weak-tie relationships linking players with shared information required to coordinate collective decisions.

A clustered network structure can transform a zero-sum game into a non-zero sum game because information about players, especially regarding previous decisions, is relatively open to network participants. This reduces the possibility of breaking trust established among participants. A densely-populated network provides an extensive monitoring mechanism and facilitates mutual reciprocity, trust, and conformance to the rules of the game (Coleman 1988). Consideration of reputation, communication, trust, and social norms, makes players more likely to build and sustain cooperation. Social capital theorists argue that cooperative norms, which are the product of repeated interaction, turn into "social capital," and cumulated "social capital," in turn, makes collaborative works easier and facilitates economic and community development (Ostrom and Ahn 2002; Ostrom 2000; Putnam 2000). Therefore, "social capital" refers to features of social organization, such as networks, norms, and trust, which facilitate coordination and cooperation for mutual benefits (Garcia 2006). In doing so, social capital lessens transaction costs and institutional friction, which allows participants to overcome these social dilemmas. The productivity of social capital makes possible the achievement of certain ends that would not be attainable in its absence (Coleman 1988). Moreover, social capital is seen, at present, as a critical factor for economic development at any level, which helps to formulate new strategies for development (Garcia 2006). In this sense, a highly-clustered network has the ability to impose constraints on defection and opportunism so that it increases the stability of a regional governance structure (Feiock, Steinacker and Park 2009).

On the other hand, the emergence of strategic actors in weak-tie network structures also provides the potential to improve cooperative strategies among actors in collective action situations by redirecting the information and resources available. Without emotional attachment and previous interaction, each player might build up reciprocity and trust with only a limited number of colleagues. In practical terms, constraints on resources and information prevent players from investigating all the social relations surrounding them. Instead, an entrepreneurial leading player explores a broader set of possible gains from other players and provides useful information, to coordinate each player's decision and its consequence. Therefore, the existence of "structural holes" (i.e. bridges and weak-ties) implies a potential for some actors as a characteristic of the structure of the network (Burt 1992). This type of social structure can create,

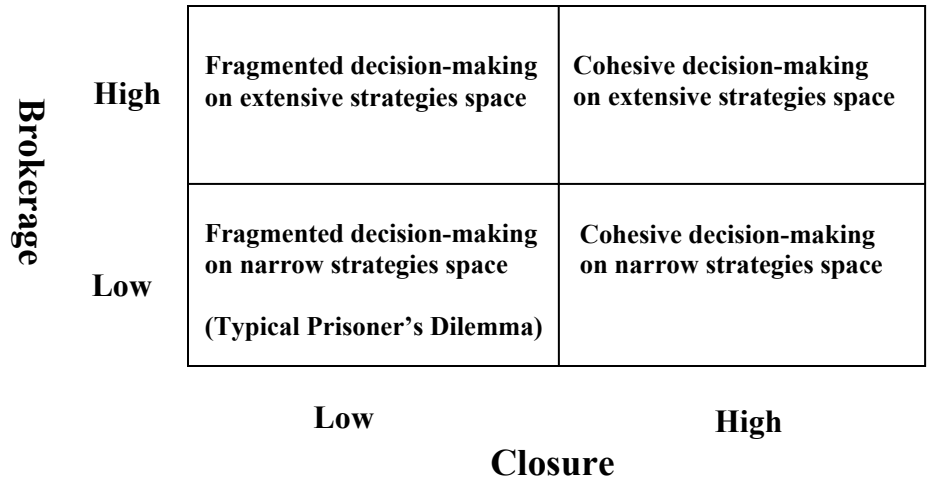
for certain actors or groups, the opportunity to occupy a certain position in the structure to pursue their ends (Garcia 2006). At a system level, some actors' opportunities could improve the welfare of a society as a whole by being better connected with each other and better provided with a broader set of useful information and possible gains from interactions with network entrepreneurs. In this sense, the existence of players filling the "structural holes" reduces uncertainty around coalition building and free-rider problems. As an example, Feiock, Park and Steinacker (2009) identify situations where a multilateral solution might provide more effective policy coordination, yet, absent an existing organization or entrepreneur, local governments confront a free-rider problem in constructing the organization.

Therefore, being in either a tightly-clustered or information-bridging structure, or both, can create a better solution. Then, the task in social network theory is to develop an overarching theoretical explanation of seemingly contradictory roles of network structures and social capital in overcoming collective action problems. One the one hand, social capital theories (Ostrom and Ahn 2002) suggest that communication, trust, and norms are more likely to be established when actors are closely linked to each other. On the other hand, structural hole theory (Burt 1992) suggests that people who seeks to exploit social gaps contribute to enlarging the set of alternatives. Of course, it seems quite obvious that individuals and organizations do both at the same time. Although each theory provides insightful conceptualizations on network structure around collective action, this shows the problem of network research based only on single theories, which tends to account for a relatively small amount of network variance. Monge and Contractor (2003) argue that utilizing multiple theories should improve our understanding of the relational aspect of interaction. They assert that this work can be implemented when researchers collect and collate data at various levels of analysis (ego, dyad, triad, group, organizational, and interorganizational) and conduct multilevel analyses.

Burt's (2005) recent work attempts to integrate multiple theories with a framework that captures both the closure (strong-tie) and brokerage (weak-tie) aspect of social networks. While closure is about subjecting a person to control to lower the risk of trusting the person, brokerage is about seeing variation by escaping the constraints of one group (Burt 2005, p 108). Network closure may be essential for collaboration because without a high degree of trust among the members, the institutional arrangements could not exist. On the other hand, network brokerage is also important not only to brokers themselves but also to the group as a whole because

entrepreneurial brokers explore a broader set of possible options within, and perhaps beyond the group by redirecting useful resources and information, which can coordinate each player's decision and its consequence. Brokerage is both a substitute and a complement to closure in that structural holes depend on the level of trust, but trust is a feature of a closed network, precisely the condition that brokers rise above. The contradiction arises from closure-brokerage tension in the following three senses (Burt 2005): First, while third parties create social capital by improving information flow in the closure mechanism, network bridges are defined by the lack of third parties. Second, whereas information is valuable when it is redundant in the closure network, brokerage creates value by exposing people to non-redundant variations in information. Third, while closure attempts to force people to behave in prescribed ways by complementing the traditional vertical chain of command in a bureaucracy, brokerage helps people to explore alternatives by exposing them to a diversity of options.

Burt (2005) suggests that closure-brokerage tension could be addressed by integrating both mechanisms in a broader model of "structural autonomy." Bridging a structural hole can create value, but delivering the value requires a closed network of cohesive members around the bridge. A structurally autonomous community, which is considered as a state of balance between high closure and high brokerage, consists of participants strongly connected to one another, with extensive bridge relations. In the collaborative regional governance context, regional partnership is more likely to be established and better performed in the community where local actors are closely linked to each other and entrepreneurial leadership explores a broader set of possible alternatives. Based on this integrated framework, this dissertation develops the modified network model of collective action around economic development policy as shown in Figure 3.1 and empirically tests the model.



< Figure 3.1> Network Structure of Metropolitan Governance: modified from Burt (2005)

CHAPTER 4
RESEARCH DESIGN AND METHODS

4.1 Scope of Research

The fragmented and competitive decision making systems of US metropolitan areas is an ideal setting to study regional governance in that 1) their social, economic, legal, and cultural characteristics are simple and unique enough to construct a self-sufficient single social system, and 2) their compositions are complex enough to capture the underlying mechanisms of fragmentation and competition so that it is worthwhile to explore complexity in greater detail.

Metropolitan Statistical Area (MSA) has been extensively used to capture the boundaries and characteristics of a metropolitan area. The Federal Office of Management and Budget (OMB) has specified several different definitions to capture metropolitan regions, which includes Metropolitan Statistical Areas (MSAs), Consolidated Metropolitan Statistical Areas (CMSAs), and Primary Metropolitan Statistical Areas (PMSAs). Among several different definitions, these share a common feature that a metropolitan area consists of a core area with a large population nucleus and its adjacent communities having a high degree of economic and social integration with the core area. Especially, an MSA is an area associated with at least one urban cluster that has a population of at least 50,000. The area comprises the central county or counties containing the core and adjacent counties that are socially and economically integrated with the central county or counties. By definition, an PMSA is a MSA that is part of a larger urban complex with a population over one million and is also designated as a CMSA.

4.2 Overview of Research Design

Based on these definitions, this dissertation research examines under what circumstances a metropolitan area can successfully form a regional partnership and, in doing so, attempts to provide more complete and integrated explanations.

The investigation of regional partnership proceeds in two stages: First, a formal model of regional partnership formation is developed to investigate how the nature and composition of participants in a collective situation affect the patterns of alliance formation. Controlling for the

contextual and relational elements of collective action, this stage will focus exclusively on building simple propositions regarding group size and group composition from the game theoretic perspective. On the other hand, accounting for both the contextual and relational elements of collective action is also necessary to understand how and when regional partnerships form and sustain. The second stage will focus mostly on deriving statistical inferences on how contextual and relational factors, with possible interactions with variables established in the first stage, affect regional partnership formation. Attributes of communities including both the socioeconomic characteristics as well as structure of political institutions and the formal/informal network structures in which local jurisdictions are embedded, are expected to determine the mechanism of building and maintaining a collaborative regional partnership. Each of these is discussed in greater detail in the following chapters.

4.2.1 Formal Model of Regional Partnership for Economic Development

A very simple formal model of regional partnership formation which will be discussed in the next chapter provides the foundation for the research design in this dissertation. A formal model of regional collaboration basically investigates how complexity in the composition of players affects the decision making process in collective action situations. In other words, the formal model which is developed in this dissertation systematically captures patterns of regional partnership formation and the sufficient conditions for successful partnerships by accounting for both complexity and uncertainty around collective action. What is meant by "formal game theoretic model" is that the analytical explanation in the forms of a series of assumptions of how decisions of individuals and their interactions affect collective outcomes by specifying characteristics of actors, strategic choices available to them, the utility function defining payoffs after the game is played, and so on.

In order to capture the essence of the dilemma in this particular collective action problem, the development of formal model begins with following three premises: First, whether or not a regional partnership for economic development is formed is a typical example of the discrete public good provision in that a discrete public good is provided if the number of contributors exceeds the required levels of provision (threshold) and no good is provided otherwise. If there are sufficient contributors to achieve the minimum level of economies of scale, then, members can enjoy the collective efforts of the public good provision. Second, while the decision making of each individual actor is critical to shape the overall configuration of an alliance, the impact of the contribution which each player

makes is not identical across the actors. In this particular setting, a local jurisdiction has a different size in terms of population and economic resources, which leads to unequal impacts on regional decision making systems. Therefore, the formal model of regional partnership in this dissertation allows the concept of actor heterogeneity, especially in their weights on final decision making. Third, there exists an uncertainty around where the threshold for economies of scale would be, which will be represented by the probability function of threshold levels. Knowing who will join, stay, or exit are even more critical issues in this particular setting; this type of complex situation generates greater uncertainty around the probability of alliances being established. And this becomes more complicated when the threshold is often not known with certainty. Here, the formal model of regional partnership assumes that the conditions for a minimum winning coalition are not determined at a fixed point, yet, rather come from a commonly known distribution function.

Based on those clear-stated premises, this dissertation research builds a formal model of regional partnership for economic development. This enables us to systematically capture the relationships among numbers of players, the weight distribution among players, uncertainty on threshold, and players' strategic decisions on cooperation in successful regional partnership formation. One way of demonstrating their relationships is to solve for Nash equilibrium numerically by investigating how cooperators or non-cooperators attempt to maximize their utility functions which are determined by group size, weights of players, benefit/cost structure, and so forth. However, what this dissertation is more interested in is to effectively demonstrate how each individual confronted with complexity and uncertainty makes the best decision whether or not to commit himself/herself to collaboration depending on numerous scenarios. Therefore, two comparative statics that answer the following two questions will be conducted in the subsequent section: 1) How will the probability of individual players to make contributions change as the required threshold level becomes large? 2) How will the overall probability of contribution, as defined as a weighted sum of probability of individual players to make contributions, move around as the required threshold level changes? Comparative statics chooses two sample metropolitan areas representing similar population sizes and number of game actors, yet different compositions of players, and compare how the probability of both individual and collective outcomes will vary depending on changes in parameters defined in the formal model.

This work is expected to allow an easier transition to empirical tests; it allows us to derive some working propositions directly from a formal model, which can be used as a baseline for later empirical analysis in the second stage, and to illustrate whether or not those propositions are consistent with model predictions. Based on these propositions, this dissertation research will conduct an empirical analysis with regional partnership formation data in the subsequent chapter. Finally, a formal model chapter concludes with a brief sketch of a potential extension of the formal model by reflecting the social network aspect of collective action problems. In other words, this dissertation work allows room for future development of more sophisticated models including the claim that the interdependence of decision making of participants affects the level of credible commitment requirements so that it possibly alters "the rules of the game" endogenously.

4.2.2. Empirical Analysis of Regional Partnership for Economic Development

The second stage of research design will investigate U.S. metropolitan areas by statistically testing hypotheses regarding how variables directly derived from the formal model in the first stage, along with contextual and relational factors, affect the decision making in collective action situations, especially in the context of regional partnership formation.

The dependent variable, formation of regional partnerships, is measured by *whether or not a regional partnership for economic development has been established in a metropolitan area* between 1990 and 2007. This binary variable equals 1 if a metropolitan area had adopted at least one regional partnership for economic development during that span and equals 0 if a metropolitan area did not. For this analysis, the listing of regional partnerships in 1997 originally collected by Olberding (2002) will be extended though 2007 based on the resources of *Site Selection Inc. ("The Geo-Economic Index")*, *the International Economic Development Council*, online source from Economic Development Directory (http://www.ecodevdirectory.com), and various online website searches.

Independent variables in the model encompass the conceptual elements developed in the game theoretic and social network theories discussed in the previous section. Those components are categorized into three parts: the nature of collective action, contextual attributes of regional areas, and relational network characteristics within regional areas.

The nature of collective action is captured by both group size variable and its composition (degree of fragmentation) variable. Statistical investigation of the effect of these variables on partnership formation empirically tests relevant propositions developed in the first stage. The literature in the field of collective action argues that group size should be small to decrease coordination costs (Ostrom 1990; Issac and Walker 1988). Coordination problems for collective action increase with the number of participants. This includes a measure of the number of participants as indicated by the total number of municipal and county governments in each metropolitan area. On the other hand, the group composition variable measures the degree of concentration of collective decision making in metropolitan areas, or simply put, *whether or not there are dominant governments in each metropolitan area.* The emergence of leading actors is expected to increase the level of collaborate strategies and overcome the collective action problem, especially when the uncertainty around collaboration becomes larger. The degree of concentration in collective decision making is measured by the *Herfindahl-Hirshman Index,* originally developed to capture market competition, or degree of monopoly. A normalized *Herfindahl-Hirshman Index* allows us to compare the extent to which collective decisions will be made by one or more major participants controlling for number of participants. While market share indicates concentration of producers in the market competition context, both population size and economic size are considered to reflect the concentration of local jurisdictions on the decision making process. Greater concentration in decision making is expected to help overcome the collective action problem of building regional partnerships.

The model will be estimated by using logit maximum likelihood estimation. While dealing with binary dependent variables, typically coded as 0 or 1, logit models allow the researcher to explore how each explanatory variable affects the probability of the event occuring (Long 1997). Since the model is non-linear, maximum likelihood estimation is used.

4.3 Importance of the Empirical Implications of Theoretical Models (EITM) Approach

This dissertation addresses both analytic game theoretic modeling and empirical statistical testing in its methodological approach in order to achieve the potential inferential value that might come from a closer integration of rigorous theorizing and empiricism (Aldrich et al. 2008). This goal can be accomplished when researchers utilize a structured combination of a set of tools designed to increase transparency and improve modeling (de Marchi 2005). The

recent emergence of the Empirical Implications of Theoretical Models (EITM) approach has been a well-known attempt to search for a proper approach to mathematical modeling in the social sciences. As a research design method, its goal is to bridge the chasm between formal modelers and empirical researchers, with the hope that this synthesis will lead to better models that have clearly testable empirical hypotheses (de Marchi 2005).

Long standing research conventions of each side and its insufficient interaction between theory and empirics yield irrelevant deductions and false empirical inferences:

> Empirical observation, in the absence of a theoretical base, is at best descriptive. It tells one what happened, but not why it has the pattern one perceives. Theoretical analysis, in the absence of empirical testing, has a framework more noteworthy for its logical or mathematical elegance than for its utility in generating insights into the real world. The first exercise has been described as "data dredging," the second as building "elegant models of irrelevant universes." My purpose is to try to understand what I believe to be a problem of major importance. This understanding cannot be achieved merely by observation, nor can it be attained by the manipulation of abstract symbols. Real insight can be gained only by their combination." (Aldrich 1980)

This type of problem-- that the growing sophistication in theory and method were proceeding all too often independently of one another-- is implicitly, but not explicitly, observed by a substantial body of urban politics literature, as well, when they found the conclusions from the public choice approach and regionalist perspective more or less contradictory: Since Tiebout (1956), public choice models based mostly on the development of formal models argue that a multiplicity of cities results in an efficient outcome. On the other hand, the regionalist tradition, heavily emphasizing statistical testing, views that a small number of local jurisdictions results in economy-of-scale benefits and improvement of political accountability. However, what need more focus is not what conclusions both research conventions have made and which argument is ultimately correct, but how they draw those seemingly conflicting conclusions and how we make a judgment on whether those approaches are reliable and justifiable. In other words, whereas the rational choice tradition, based on a series of unrealistic assumptions, may build parsimonious models of irrelevant universes, the regional approach simply overexploits statistical hypotheses testing without well-established theories so that, all too often, a research can find a model that fits a sample rather too well, demonstrating how modeling choices allow a researcher to discover

relationships that are not genuine. In this regard, both traditions without the complement of each other could be equally vulnerable as a research design.

Moreover, what we have observed more often and have been more concerned about in many literatures addressing empirical verification of relevant theories is the overexploitation of statistical analyses, which rely too heavily upon statistical assumptions and theories rather than theories themselves in our own field. This leads to the lack of both proper understanding and systematic theory building in our field. Therefore, despite numerous empirical works, we eventually have very few theories or theoretical models to test empirically. In addition, even empirical modeling firmly grounded on good theories is not immune to the suspicion from social scientists due to the possibility of overfitting the data; since many models are quite complex, researchers have numerous parameter choices that allow them to overfit models, generating any outcome they wish:

> Empirical work, the way too many political scientists do it, is relatively easy. Gather the data, run the regression/MLE with the usual list of control variables, reports the significance tests, and announce that one's pet variable "passed." This dreary hypothesis-testing framework is sometimes even insisted upon by journal editors. Being purely mechanical, it saves a great deal of thinking and anxiety, and cannot help being popular. But obviously, it has to go. Our best empirical generalizations do not derive from that kind of work. How to stop it? The key point is that no one can know whether regressions and MLEs actually fit the data when there are more than two or three independent variables. Theses high-dimensional explanatory spaces will wrap themselves around any data set, but typically by distorting what is going on. They find the crudest correlations of course: education increases support for abortion, for example. In the behavioral tradition, that counts as a reliable finding. But no one knows why education is associated with that moral position (higher intellect discovering? mindless adoption of elite tribal norms? correlation with something else entirely?), and that leaves open the possibility that abortion attitudes do not work the way the literature says they do. Getting rid of this cheap sense of "empirical findings" is probably the central task that empirical political research faces…. (Achen 2002)

Kmenta (1997) also points out similar problems in the conventional approach of searching through the space of possible models, maybe an infinite set, until one finds a model that "works" for the existing sample:

> In current research practice, the availability of well-defined competing models is not that frequent. Economic theory can often indicate which explanatory variables should be included but does not give much guidance with respect to functional form, lags in behavior, inclusion of control variables (e.g., social or

> demographic), or measurement of variables. Typically a researcher is faced with a list of regressors of which some are clearly to be included in the equations but most are uncertain candidates. The researchers then resort to some ad hoc criteria that enable to them to make a choice…. Probably the most common way of choosing a model in empirical research is by "data ining." A researcher confronted by a list of regressors tries various combinations of variables until satisfactory results (high R^2 "correct" signs of regression coefficients, a reasonable value of the Durbin-Watson test statistics, etc.) are obtained. This is known as "torturing the data until they confess." (Kmenta 1999, pp598-9)

Therefore, overfitting may be problematic in that it does not distinguish the partially idiosyncratic nature of any fixed sample from the genuine characteristics of the data generating process (de Marchi 2005). For example, many of empirical studies in metropolitan governance literatures correctly view fragmentation among local jurisdictions in a metropolitan area as a barrier to interjurisdictional collaboration. Therefore, they attempt to conceptualize and measure the degree of complexity and centralization among local jurisdictions by introducing their own operational definition of fragmentation, such as the number of jurisdictions and density of government (Sbragia 2000; Ehrenhalt 1995; Olberding 2002; Post 2002; Rawlings 2003). However, few works focus analytical attention on the development of theoretical explanations for how the competitive motivation of participating local governments harm or, even improve, the level of cooperation. Rather, even their insightful findings, by their nature, tend to be a product of only reporting "positive" results and only the "final" model. In this sense, the success of certain empirical analyses should be evaluated by a set of standards that would allow empirical work to be tied more closely to testing deductive and analytical approaches.

However, this is, by no means, a critique of empirical analysis. Although better analytical models, with more verisimilitude, allow an easier transition to empirical tests, models without empirical tests are doubtful. In other words, good statistical work allows us to differentiate useful models from the universe of irrelevant models; further it allows us to investigate the generalizability of a model and the places where assumptions are carrying too much of the load (de Marchi 2005). This implies that a structured combination of formal modeling and empirical testing is superior to any approach taken separately. Therefore, good research design should emphasize addressing well-defined problems with some combination of clearly-stated premises, logically coherent theories that explain the relations among the premises, and logically coherent empirical work developed to evaluate the premises and/or the relations. In doing so, it enhances transparency and improves modeling. In this sense, the idea of EITM (Empirical Implications of

Theoretical Models) is to bring deduction and induction, hypothesis generation and hypothesis testing, closer together. Building upon the philosophy of EITM, this dissertation research is expected to make a marginal contribution to reduce the gap between analytical game theoretic models and their empirical referents, which becomes a more and more acute need in the social sciences.

CHAPTER 5
THEORETICAL MODEL OF REGIONAL PARTNERSHIP FORMATION

5.1 Overview

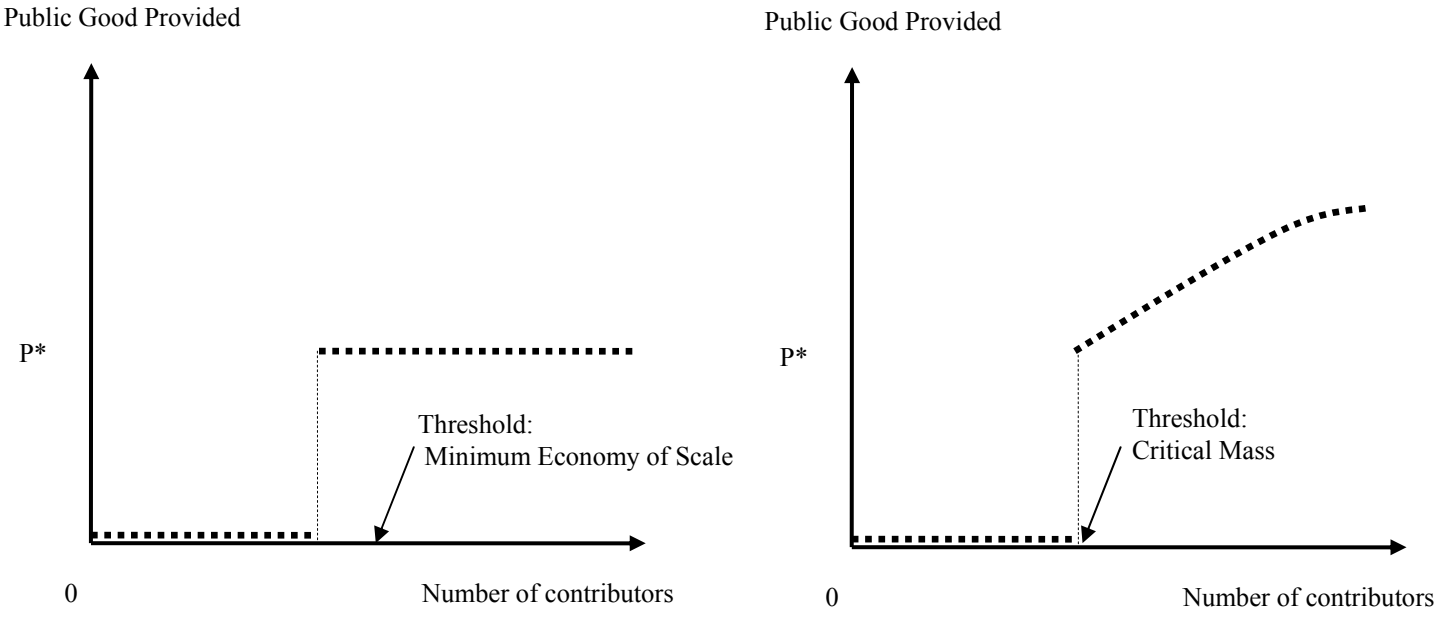
A formal model of regional partnership formation in this chapter provides the foundation for the next two stages. Although simple application of a Prisoners' Dilemma game to collective action issues, especially when it is repeated many times, predicts that cooperation among players might be an attractive strategy, less attention has been paid to how complexity in the composition of players affects the decision making process in collective action situations. Existing literatures recognize both centralization and complexity as important variables to either deter or enhance regional collaboration (Olberding 2002; Post 2002; Rawlings 2003), yet, the impact of these variables on levels of regional cooperation has been tested only in a limited way by simply focusing on statistical significance in empirical data. In this sense, the formal model in this dissertation systematically captures patterns of regional partnership formation and the sufficient conditions for the successful partnerships by accounting for both complexity and uncertainty around collective action.

In order to capture the essence of this type of collective action problem in a parsimonious way, the formal model depends on the following two assumptions: First, the decision whether or not to join the regional partnership is considered to be an example of discrete public good provision in that a discrete public good is provided if contributions exceed the required levels of provision and no good is provided otherwise. If there are sufficient cooperators to achieve the minimum level of economies of scale, then, members can enjoy collective benefits. Second, while the strategic choice of individual actors is critical to shape the overall configuration of collaboration, the impact of each player is not identical. In other words, the model assumes the heterogeneity of actors in their weights because it is more realistic to consider that players (local jurisdictions in this particular setting) are different in their jurisdiction size in terms of population and economic resources as well as network position so that it leads to differential impacts on the regional decision making system.

5.2 Basic Components of the Model

5.2.1 Discrete Public Good Provision Game

As mentioned, the formal model of regional partnership in this dissertation relies on the assumption that the individual decision to join the regional partnership constructs overall discrete public goods provision. In the discrete public provision case, individual actors are expected to make binary decisions about whether or not to contribute. Thus, the strategy profile of actor i is defined as $S_i = \{0, 1\}$. Then, a discrete public good is provided only when $\sum_{i=1}^{n} S_i \geq k(\leq n)$, where n is a number of participating actors, and k is a critical number of actors to achieve a minimum level of economies of scale. In other words, if there are sufficient contributors exceeding required levels, this pubic good is provided and members can enjoy collective benefits. In contrast, as illustrated in Figure 5.1, any individual decision to contribute or collective attempt to collaborate below the minimum required level will be entirely wasted. In this sense, a contribution decision without reliable coalition does not make any difference in this case. Therefore, the level of public good provided can be described as a step function in Figure 5.1.



<Figure 5.1> Discrete Public Good Provision:
requiring threshold point which constructs minimum economy of scale

This problem becomes even more complicated when free-riders play their parts. Since there is no feasible way of deterring actors from enjoying a public good provided without contribution, actors are likely to prefer becoming a free-rider. This implies that each actor is likely to respond sensitively to the uncertainty around the collective action situation and to try to exploit this type of uncertainty. On the other hand, since they also appreciate the substantial benefits from collaboration, there is a fair amount of chance to contribute. Therefore, individual actors in this situation are supposed to deal with their internal strategic decision whether or not to contribute given the expectation of what others will choose, which leads to a great deal of uncertainty. And, more generally, we assume that actors have pre-determined preferences on possible scenarios in the following:

$$Ui\ (Si=0, -S \geq k) \geq Ui\ (Si=1, -S \geq k-1) \geq Ui\ (Si=0, -S < k) \geq Ui\ (Si=1, -S < k-1)$$

, where *Ui* is a utility of individual *i* and *–S* is a number of other contributors. (The payoffs structure of prisoners' dilemma game may be the simplest illustration of the problems embedded here that players are likely to end up with Nash equilibrium rather than social optimum due to the self-interest motivation.)

5.2.2. Block Voting Game: Actor Heterogeneity

The second assumption is that the impact of each player on the overall configuration of public good provision is not identical. This assumption is critically important to the metropolitan governance setting on which this research is based. Since local jurisdictions in a metropolitan area differ in various aspects such as population, economic size, social position, etc., actors should be treated as heterogeneous, and this creates more complexity than the simple discrete public good provision described previously.

Let us assume that there are five different local jurisdictions, *i= {1, 2, 3, 4, 5}* in a metropolitan area. This metropolitan area consists of one central city and its suburbs, which implies that each local government has different population size and economic power so that it can cause a different impact on shaping the overall outlook of partnership formation. Therefore, the game setting is somewhat similar to *"weighted voting"* in a political process, a situation

where votes are cast in blocks. This can be described in a way that each local government has a different size, which leads to weighted influence as follows:

[Q: w_1, w_2, w_3, w_4, w_5] = [Q: 10, 5, 5, 3, 2]

, where Q is defined as a *threshold*, which determines minimal level for cooperation for public good provision and w_i is a wieghted votes which player i has. (Q also can represent a *quota*, which specifies the minimal vote to win or achieve the goal in voting game literature.) In many voting schemes, this is set as one-half the sum of the weights plus one, which is also known as a plurality votes. While forming a regional partnership needs at least a certain amount of participants in order to achieve economies of scale, it is not a necessary assumption that it should follow the plurality voting rule. Sometimes, it should be greater or smaller than the plurality rule. However, for the time being, we set Q as 13, which is slightly over one-half of the total votes, 25 for simplicity. Later on, we will articulate how the uncertainty around threshold Q, can eventually affect the strategic behavior of participants as we make a general assumption on the distribution of a threshold Q.

On the other hand, each local government has two alternative choices when dealing with collaborative decision making: One is simply to join the collective action by contributing and the other choice is to stay out of this collective effort. This strategy profile of actor i is already defined as S_i= {0, 1} in the previous assumption. As defined previously as well, payoffs in this game with multiple players rely on each player's own strategy and the results of coalition formation reflecting other players' choices as overall outcomes. If a player chooses to collaborate and this causes the formation of a regional partnership, then he/she receives benefits proportional to its contribution. However, to commit to collaboration invokes a cost. In other words, each player has to donate a certain amount of its resources to the collaborative activity in proportion to its weight such as a contribution to construction of infrastructure. In general, this investment can be sufficiently offset by large benefits once a coalition is successfully formed. However, it is also common knowledge that a cooperative strategy can cause severe harm once a local government is betrayed and an alliance is not formed. And, as a result, it should develop its own economy after all, which guarantees a relatively small amount of benefits while the large investment made is irreversible and non-refundable.

In this sense, the best case scenario is that a player chooses to defect but the regional partnership is still formed. In this case, a local government can enjoy the positive externality from a neighboring jurisdiction without additional investment besides economic development resulting from its own plan. When a player decides to deviate and a coalition is not built as a consequence, this can cause neither good nor harm by implementing his/her own development plan. The order of actors' preferences is also previously defined as follows:

$$Ui\ (Si=0, -S \geq k) \geq Ui\ (Si=1, -S \geq k-1) \geq Ui\ (Si=0, -S<k) \geq Ui\ (Si=1, -S<k-1)$$

, where *Ui* is a utility of individual *i* and *–S* is the number of other contributors.

Then, keeping in mind that Q is 13, this game setting can be solved numerically. First, from the weighted voting game literature, we can infer Minimum Winning Coalitions (MWCs) as follows:

Minimum winning coalition: Senario A: [$\{S_1, S_2\}$ when $w_1+w_2=15$]
Senario B: [$\{S_1, S_3\}$ when $w_1+w_3=15$]
Senario C: [$\{S_1, S_4\}$ when $w_1+w_4=13$]
Senario D: [$\{S_2, S_3, S_4\}$ when $w_2+w_3+w_4=13$]

Here, we can find four combinations of actor's alliance achieving a minimum reqired level of collaboration. It is also not difficult to find that player 1 is a critical member of three cases out of four possible alliance formations. This implies that government 1 plays an important role in forming most cases of minimum winning coalitions in this setting because it has a relatively dominant position in its weight. In contrast, the decision of government 5 is almost trivial so that it does not change any pattern of winning coalitions. Thus, to solve this game, we can separate the strategies of each player into some sub-groups, which are [S_1, (S_2, S_3, S_4), S_5], and can speculate the decision making process sequentially.

For player 1, it confronts largely three possible situations depending on the strategies of player 2, 3, and 4:

1) If (S_2, S_3, S_4)= (1, 1, 1), then player 1 can enjoy the positive externality without joining the alliance and paying additional costs of investment since sum of

player 2, 3, and 4 is large enough to form a winning coalition. Player 1 knows adding player 1 is redundant to form the winning coalition and economically inefficient, therefore, player 1 will not contribute when it is confident that $(S_2, S_3, S_4) = (1, 1, 1)$. *Scenario D represents this particular case.*

2) *If* $(S_2, S_3, S_4) = (0, 0, 0)$, *then player 1 knows that its effort to collaborate with others can be eventually in vain since none of the significant members will collaborate with player 1. Therefore, player 1 also will not contribute and avoid the non-refundable investment situation when it is certain that* $(S_2, S_3, S_4) = (0, 0, 0)$.

3) *When* (S_2, S_3, S_4) *is otherwise, it constructs cases where at least one of three players will cooperate. Given this knowledge, player 1 will make a strategic decision to cooperate and a coalition will be formed accordingly. However, every player knows that the situations where more than two players among players 2, 3, and 4 collaborate is not Pareto efficient because any one of the additional players among three participants can build a minimum winning coalition with player 1 and those minimum winning coalitions are sufficient enough to form a successful regional partnership. In this sense,* $(S_2, S_3, S_4) = (1, 0, 0), (0, 1, 0)$ *or* $(0, 0, 1)$ *is an especially important case to investigate. Therefore, as a benchmark example, we can numerically solve for the conditions that any one of the three players, assuming well-defined restrictions on payoffs such that,*

$$Ui\ (Si=0, -S \geq k) \geq Ui\ (Si=1, -S \geq k-1) \geq Ui\ (Si=0, -S<k) \geq Ui\ (Si=1, -S<k-1)$$

, where Ui is a utility of individual i, S_i *is a strategy of actor i, and –S is a number of other contributors. These restrictions specify the conditions in which players 2, 3, and 4 respectively choose to collaborate with player 1 which are scenarios A, B, and C in this setting.*

Based on the previous example of the discrete public good provision with actor heterogeneity, we can construct a more general model which explains regional partnership formation in a metropolitan area. As we will discuss in the later model, both the public good provision game and block voting game approaches suggest that a pattern of collaboration largely depends on the total number of actors, the distribution of weighed influence allocated among players, the degree of uncertainty around threshold, and payoff structures including benefits and costs.

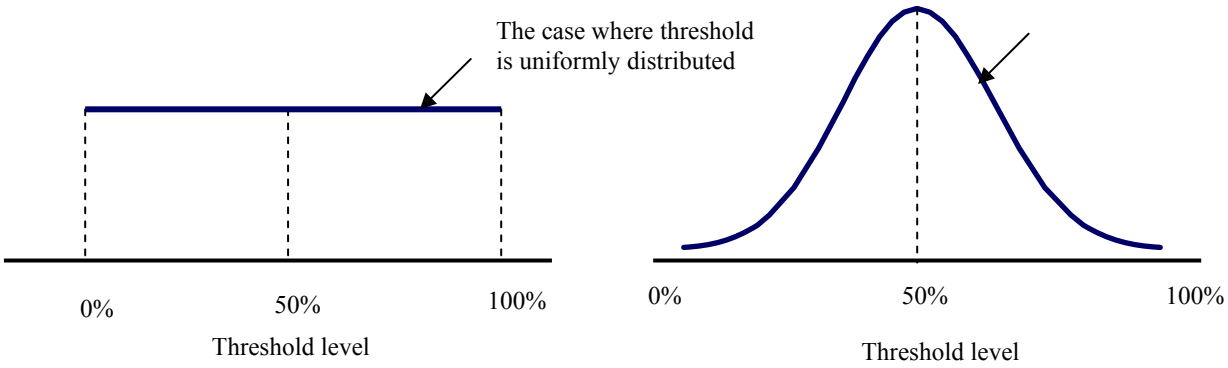
5.3 Formal Model of Discrete Public Good Provision among Heterogeneous Actors

In the previous section, the concept of both discrete public good provision and block voting is speculated in detail. Based on the integration of these approaches, we can define several major components of the game that we investigate.

First, the players are defined as N = {1, 2, 3, ……., n}, $2 < n < \infty$ with different weights w = $\{w_1, w_2, w_3, \ldots\ldots, w_n\}$. Different weights reflect different influences on alliance formation that each player can possess with respect to population, economic size, and other social status.

Then, the strategies profile of player *i* can be defined as $S_i = \{0, 1\}$ implying that a player is allowed to make a binary choice, either to contribute or not to contribute. And the decision making of each individual counts toward either increasing or decreasing the probability of the alliance being formed. In other words, a discrete public good is provided only when $\sum_{i=1}^{n} S_i \times w_i \geq k$, where *k* is a threshold to achieve a minimum level of economies of scale. Again, players have identical binary strategy sets $S_i = \{0, 1\}$, which are interpreted as participation, in-out, or yes-no decisions. Therefore, if $S_i = 0$, then a player i does not join the cooperation or simply defects. This study also assumes that the decisions of players to join the alliance are to be made simultaneously for simplicity. Previous studies of the discrete public good provision typically assume that players in the game setting are relatively homogeneous in their weights so that the participation decision of one player does not have to be discriminated from that of others. However, in this particular setting, who will join, stay, or exit is a more critical issue. This generates great uncertainty around the probability of alliances being established. And this becomes more complicated when the threshold is often not known with certainty as well.

In this sense, we assume that there exists an uncertainty around the threshold for economies of scale. While forming a regional partnership needs at least a certain number of participants in order to achieve economies of scale, it is not necessary to assume that a threshold is a fixed point or number. Although it is uncertain, it is assumed to be common knowledge to every player. That is, the threshold to provide the public good is chosen from a commonly known distribution function (McBride 2005; 2006). Let us note the c.d.f of this distribution of threshold as $F(\cdot)$, and p.d.f of distribution as $f(\cdot)$ such that F(0)=0. Therefore, by a threshold, the distribution function of $F(\cdot)$ simply means the probability of the coalition being successfully built.



**<Figure 5.2> Uncertainty on Threshold:
represented by probability distribution function**

Perhaps, a uniform distribution is the simplest functional form of threshold distribution. For example, strategic interactions under both "one person for one vote" and "weighted voting" schemes can be simply interpreted in terms of the uniform distribution of threshold if you put an emphasis only on voting behaviors, per se. On the other hand, if the distribution of threshold attempts to capture the underlying mechanism of how preferences with and across players (this is particularly important when players in the game are organizations, rather than individuals) and participation decisions, threshold distribution does not necessarily have to be uniform. A general model is set up by allowing the general form of distribution function $F(\cdot)$, but this dissertation, for simplicity, will focus on interpreting implications in the case of uniform distribution in the

later discussion. Based on the definition of threshold and its distribution we have made, we can infer that the probability of a regional partnership being formed will be $F(\sum_{j=1}^{n} S_j \times w_j)$.

Finally, we also make several assumptions on the benefits and costs of regional partnership formation. First of all, benefits from a regional partnership could be based on joint benefits from activities ranging from small scale marketing including development of brochures and other promotional materials, to large scale infrastructure improvement or development of strategic plans for regional economic development. On the other hand, costs could be either an immediate contribution to staffs and fiscal resources which would be dispatched to newly-formed regional organizations or transaction costs for negotiation, bargaining, division, and even monitoring activities. Especially, transaction costs required in this process make the contribution decision of individual participants irreversible. Therefore, costs will be explicitly assumed to be non-refundable. Another important feature of an assumption regarding benefits and costs is that we assume that benefits and costs around regional partnership formation are assigned to each participant proportional to their weights (sizes). In other words, the amount of contribution has to be made reflecting a player's weights, and the cost of contributing one unit is $c>0$. Likewise, the benefits from coalition building are assigned to the players' proportion to their weights as well. The unit value of provided public good is $v>0$, once the amount contributed exceeds a threshold and a regional partnership is formed. Both unit cost, c, and unit benefit, v, are identical across all players. Instead, overall benefits that players enjoy and costs that they bear are also proportional to their weight reflecting w_i. While this proportional benefits and costs assumption is not always the case, the analysis in this dissertation research will focus on the case of proportional benefits and costs since it is believed that this assumption better depicts reality under the actor heterogeneity situation.

Then, we can formalize player i's expected payoffs as follows:

$$U_i(S) = F(\sum_{j=1}^{n} S_j \times w_j) \times v \times w_i - S_i \times c \times w_i \qquad (1)$$

, where $F(\cdot)$ be the probability of partnership being formed
S_i be a player i's binary decision to join or not to join
w_i be a player i's size, a weight
v be a unit benefit from regional partnership
c be a unit cost of collaborating (non-refundable)

And all values of *n, v, c, F, and w* are publicly known.

In order to find out Nash-equilibrium for this particular setting, we need to understand the decision making of each individual to join or not in a more systematical way. Given others' decisions, a player decides to participate in a regional partnership only if the probability that his or her decision makes a pivotal difference in a successful formation and simple failure is significantly high. If a regional partnership is formed regardless of this player's participation decision, his or her contribution and investment turns out to be simply redundant and there is always the possibility of defection at any stage of the project, seeking the benefit of "free-rider." On the other hand, if the sum of others' contribution is substantially small so that a player knows its decision does not make a significant marginal impact on forming regional partnerships, he/she is also less likely to be engaged in cooperation. Therefore, by definition of Nash equilibrium, for any equilibrium strategy profile S^*, it must be that

$$U_i(1, S^*_{-i}) \geq U_i(0, S^*_{-i}) \text{ for any } i \text{ with } S^*_i = 1 \qquad (2)$$

$$U_i(0, S^*_{-i}) \geq U_i(1, S^*_{-i}) \text{ for any } i \text{ with } S^*_i = 0 \qquad (3)$$

From player *i*'s standpoint, inequality condition (2) presents the situation where player *i* is likely to choose to contribute. In other words, the first condition basically elaborates the marginal increase in the probability of alliance formation due to player *i*'s participation decision to collaborate:

$$F(\sum_{j\neq i}^{n} S_j^* \cdot w_j + 1 \cdot w_i) \times v \cdot w_i - c \cdot w_i \geq F(\sum_{j\neq i}^{n} S_j^* \cdot w_j) \times v \cdot w_j)$$

$$\rightarrow \quad F(\sum_{j\neq i}^{n} S_j^* \cdot w_j + 1 \cdot w_i) - F(\sum_{j\neq i}^{n} S_j^* \cdot w_j) \geq \frac{c}{v} \qquad (2\text{-}1)$$

Noticing that the left hand side of (2-1) is marginal change in the probability of success caused by *i*'s contribution, and as such, we can write this condition as:

$$f(\sum_{j\neq i}^{n} S_j^* \cdot w_j + 1 \cdot w_i) \geq \frac{c}{v} \qquad (2\text{-}2)$$

, where $f(\cdot)$ is p.d.f of threshold distribution.

Likewise, inequality condition (3) defines the situation where player *i* is likely to choose not to contribute. Again, the second condition for a non-cooperator implies that given others' strategies, a player will defect unless the probability that his/her decision will make pivotal change from a success in alliance formation to a failure. Therefore,

$$F(\sum_{j\neq i}^{n} S_j^* \cdot w_j) \times v \cdot w_j \geq F(\sum_{j\neq i}^{n} S_j^* \cdot w_j + 1 \cdot w_i) \times v \cdot w_i - c \cdot w_i$$

$$\rightarrow \frac{c}{v} \geq F(\sum_{j\neq i}^{n} S_j^* \cdot w_j + 1 \cdot w_i) - F(\sum_{j\neq i}^{n} S_j^* \cdot w_j) \qquad (3\text{-}1)$$

Also noticing that the right hand side of (3-1) is marginal change caused by player *i*' cooperation, we can write the condition for non-cooperative decision as:

$$\frac{c}{v} \geq f(\sum_{j\neq i}^{n} S_j^* \cdot w_j + 1 \cdot w_i) \qquad (3\text{-}2)$$

Let us denote C^* to be the number of cooperators in equilibrium S^*. Then, it is noteworthy that in equilibrium S^*, a cooperating player believes with probability 1 that exactly (C^*-1) of others are collaborating, so that the cooperating player is pivotal with $f(\sum_{j\neq i}^{n} S_j^* \cdot w_j + 1 \cdot w_i)$, which is equal to $f(C^*)$. By the same token, a non-cooperating player is pivotal with probability $f(C^* + 1)$. Assuming that a player who is indifferent between cooperating and defecting in equilibrium will collaborate, the conditions for existence of an equilibrium S^* are:

$$C^* = \begin{cases} 0 & \text{if } f(w_i) < \frac{c}{v} \\ x \in \{1, 2, 3, \ldots\ldots, n\text{-}1\} & \text{if } f(x) \geq \frac{c}{v} \text{ and } f(x + w_i) < \frac{c}{v} \\ N & \text{if } f(n) \geq \frac{c}{v} \end{cases}$$

Therefore, a player is willing to contribute in equilibrium if his/her probability of being pivotal is sufficiently greater than $\frac{c}{v}$. The conditions of (2-2) and (3-2) show that participating

decisions basically depend on the value of c and v, which are unit cost for contributing and unit benefit from public good provided, respectively (or their relative ratio). Not surprisingly, as benefits increase and costs decrease, the player is more likely to cooperate. And as a pivotal decision maker, an individual is indifferent between cooperation and defection when his or her probability of being a critical member is equal to $\frac{c}{v}$. Also, another finding in this formal model of partnership formation is that the probabilities of being a pivotal player are directly associated with both the distribution of thresholds and the amount of benefits and costs.

Some of the findings in this model are departing from many findings in previous research. Without consideration of weights distributed among players, the discrete public good provision model places more emphasis on finding what would be the (multiple) equilibria and how many players would decide to contribute to creating these equilibria. However, when different players have different weights in a situation where actor heterogeneity matters, which players are expected to cooperate is as important as how many players will collaborate in an equilibrium. As we have seen from the conditions for cooperation and non-cooperation, different weights impose different likelihoods of players being pivotal actors in forming successful regional partnerships. Substantively, it seems to be quite intuitive that the decisions of central cities with more powers and resources are more influential. From our five jurisdiction example in the previous section, local government 1 has such a dominant weight; thus, it can make successful alliance with any jurisdiction except government 5. On the other hand, without jurisdiction 1, *{2, 3, 4}* is the only possible combination of a minimal winning coalition.

In this light, relationships among numbers of players, weight distribution among players, uncertainty about threshold, and players' strategic decisions on cooperation can be more systematically addressed in this model. For example, if the number of players (group size) is sufficiently large and weights are relatively evenly distributed among players, then basic elements of alliance formation becomes similar to the original discrete public provision with homogenous actors. In contrast, the setting of many players with different weights provides interestingly different implications. In other words, there are two contrasting scenarios: while one metropolitan area consists of a few core central cities and their suburbs, the other area consists of several cities with relatively equal size in population and economic power. Which metropolitan area will be more successful in regional partnership formation depends on the

situations defined by group size, weight distribution (degree of fragmentation), and threshold uncertainty. The formal model assumes that the distribution of threshold and actors' actual perceptions about it play an important role in forming the alliance. If the threshold level required for discrete public good provision is substantially high, participation of players with small weights could be as important as the cooperation of dominant players. All of these examples suggest that we need a more systematic understanding of relationships among group size, weights of players, threshold, and players' strategic decisions on cooperation in the sense of both theory building and empirical testing.

Therefore, this dissertation research proposes several propositions, which are developed directly from the formal model in this chapter and also are empirically testable in the later chapters. The propositions proposed here basically focus on investigating how behaviors of cooperators or non-cooperators are affected by reacting to different game theoretic settings. This provides a better explanation for how group size, weights of players, uncertainty around threshold, and benefit/cost structure respectively affect the players' decisions and their interactions controlling for others.

5.4 Testable Propositions from Formal Model

From this formal model, we can develop several propositions to investigate how the nature and composition of participants along with payoff structures affect the decision-making of individual actors and their interactions:

(P_1) Concentration of Decision-making System (Distribution of Weights among Players) Proposition:
Joint provision of a public good is more likely to be achieved when there is a dominant local jurisdiction than when there are several local governments whose influences are relatively evenly distributed.

When weights are evenly distributed, collective action problems become more difficult issues to solve. This situation will be even more problematic when the number of players becomes larger. In this sense, regional partnership formation among relatively homogeneous participants is very close to the collective action problem as Olson (1964) originally described. On the other hand, when there is single dominant player in the region, this jurisdiction can act as

a leader to easily construct a critical mass. Then, this actor has a better position to attract additional members to build a minimal provision coalition. Therefore, the region-- having single local government that can play a leadership role-- is more likely to overcome the collective action problem.

($P_{1\text{-}1}$) Group Size Effect (Number of Players) Proposition:
As the number of players grows and the threshold level is substantially high, a public good provision coalition is less likely to be established.

This hypothesis is identical to Olson's (1964) original argument. Even in a heterogeneous players' setting with a dominant player, an increase in the number of players makes the role of the dominant player less vivid. Thus, this increases the uncertainty around building up the coalitions and makes the threshold point relatively high, which leads to a failure to formulate a collaborative approach. Therefore, when there are many players in the region, a public good is less likely to be provided regardless of the distribution of weights.

(P_2) Benefit and Cost Structure (Traditional Game Theoretic Prediction) Proposition:
As the benefit gets higher and the cost becomes low, players feel the collaborative strategy is more attractive so that regional partnership is more likely to be built

The payoffs from collective action define both collective and selective incentives from collaboration. The perception of more expected benefits with less costs, including transaction costs involved, increases the probability of a player being a part of collaboration. Therefore, relative profitability needs to be high in order for collective action to be feasible (Begossi 1998; Warren and Pinkston 1998). This also implies that the greater the underlying economic problems of a region and the larger the aggregate gains from the collaborative development, the greater the likelihood of establishing a collaborative arrangement to do so (Lubell et al. 2002; Ostrom, Gardner, and Walker 1994; Libecap 1989). While both expected and realized benefits and costs are difficult to capture empirically, this dissertation views that transaction costs as well as direct costs are major components of collaborative activities. And, focusing on transaction costs in the later stage allows us to test this particular proposition in a more concrete way without losing generalizability, since neither benefits nor costs alone but a benefits/costs ratio would be

the major motivation for players to contribute. This means that the concept of the costs of collective action can be more operationalizable by examining the degree of transaction costs involved in the collective action situation.

($P_{2\text{-}1}$) Behavior of Major Player Proposition: The Effect of Privileged Group
Even when the threshold level is low, a dominant player will pursue regional partnership, rather than developing its own plan.

This sub-proposition could be an assumption of this model, rather than a proposition itself, yet it emphasizes the fact that from the perspective of self-interested actors, benefits from collaboration are more likely to be synergetic. When there is a dominant player in the region and the threshold point is substantially low, a major player, like central city, generally has two options: 1) to pursue its own development plan without concerning about the free-rider problem or 2) to still exert its effort to provide the public good jointly. This player will devote its resources to its own development plan only if the expected benefit of the collective project is low and the predicted cost dealing with other local jurisdictions is high. This means that the strategy will depend largely on the ratio of benefits and costs as well in this case. Although it is not always the case, benefits from collaboration are, in general, substantially high. In fact, many empirical studies report results confirming that large jurisdictions make an effort to develop jointly, not only to extract benefits in the short run, but also to pursue non-economic benefits and ensure a leadership position in other collective action situations. Therefore, a dominant player is more likely to choose regional partnership as an economic development strategy even when it is not necessary.

<Table 5.1> Summary of Model Predictions

Variables	Direction	Measures
Number of players	-	Number of localities (cities and counties) per 10,000
Degree of decision concentration	+	HHI (Herfindahl-Hirshman Index)
Benefits	+	Economic needs: per capita income, growth rate, unemployment rate
Costs	-	Transaction costs (Actor attributes heterogeneity: race dissimilarity, income dissimilarity, education dissimilarity)

5.5 Comparative Statics: Model Predictions

While there are many different comparative statics that one can examine in the model, two are of major interest to this dissertation: 1) the behaviors of individual players in different collective action situations, and 2) the overall outcomes based on their individual decisions. Both of these comparative statics rely on the same underlying dynamics: 1) given uncertainty around threshold, the individual player is expected to contribute only when its decision to contribute make a pivotal change, then 2) the overall likelihood of collaboration being established in the community is determined by the weighted average of individual decision. Theses individual and collective decisions are represented by probability (p) as contributing to the public good provision. Therefore, each of the comparative statics will show how these likelihoods (y-axis) change when the nature of the collective action dilemma moves from a low level to a high level of uncertainty (x-axis).

In addition, in order to compare how the different composition of game players creates the different outcomes, this dissertation research chooses two sample metropolitan areas in the U.S., whose population size and numbers of jurisdictions are relatively similar, yet their population distributions are somewhat contrasting as shown in Tables 5.2 and 5.3. In this illustration, while Raleigh--Durham--Chapel Hill, NC (MSA) consists of 6 counties and 36 cities, Wake county accounts for more than 50% of the population in this metropolitan area. On the other hand, Albany-Schenectady-Troy, NY (MSA) includes 6 counties and 100 cities, and their population is relatively evenly distributed, thus, its collective decision making is expected to become more decentralized under this circumstance. In other words, two metropolitan areas differ in their degrees of concentration (or decentralization) on their decision making system, which is measured by *Herfindahl-Hirshman Index (HHI)*. It is basically developed to measure market competition, or degree of monopoly, which represents perfect competition if it is close to 0 and a monopoly when it is close to 1.

$$HHI = \sum_{i=1}^{n} S_i^2 ,$$

where S_i is the (market) share of individual i in the market.

Here, $S_i = \frac{w_i}{\sum_{i=1}^{n} w_i}$ in this particular setting

In our two sample metropolitan areas, their *HHI*s are measured by 0.338 and 0.229, respectively (*NHHI*s are 0.322 and 0.222). This implies that the Raleigh--Durham--Chapel Hill, NC metropolitan area is a more concentrated decision making system than Albany-Schenectady-Troy, NY metropolitan area. As one finds out in the table below, that Wake county accounts for more than 50% of the population is a major source of potential concentrated decision making. *Herfindahl-Hirshman Index (HHI)* and its normalization will be discussed more in detail in the next empirical analysis chapter. Tables 5.2 and 5.3 summarize more descriptions of each metropolitan area. The definition and boundary of both metropolitan areas are derived from those records from 1999 reported by The Federal Office of Management and Budget (OMB) and population information comes from the US Population Census 2000.

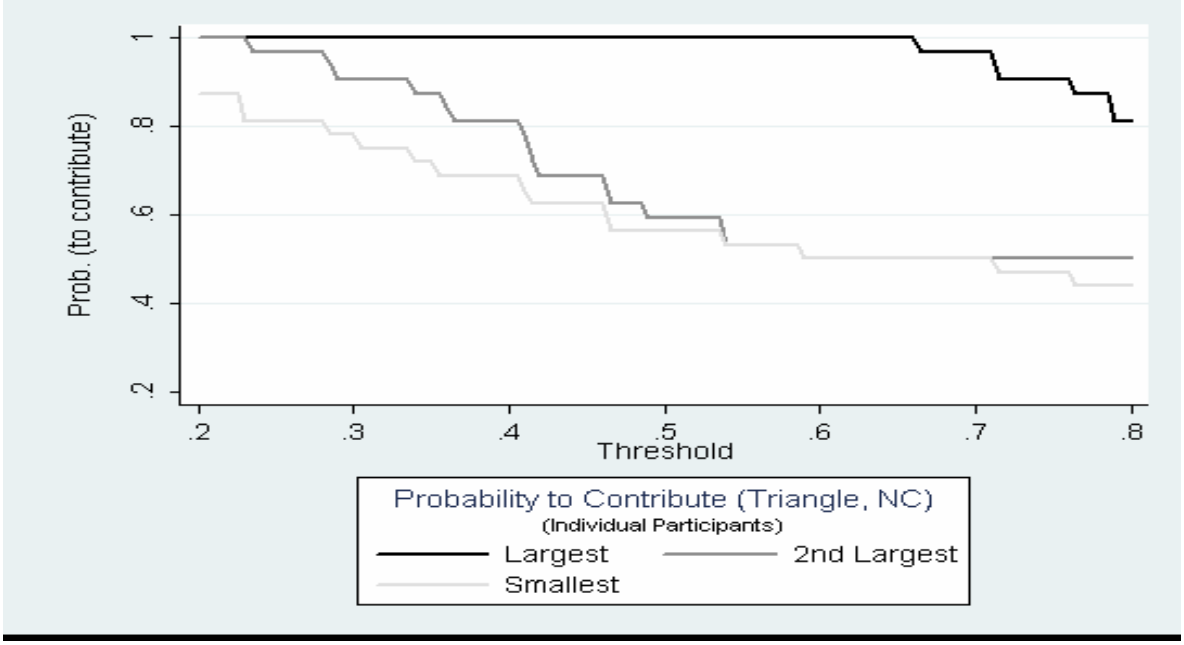
In each sample, the individual probabilities of contributing to the public good provision, depending on the level of threshold, are calculated. Here, we simply assume that threshold levels are uniformly distributed and individual players will contribute only when their participation makes a pivotal change. First, Figure 5.3 reports the probability of individual players to be contributors in a relatively concentrated decision making system. Overall, individual players' probability to contribute decrease as uncertainty (threshold requirement) becomes large. On the other hand, the decreasing rate of contribution probability also differs among players. Here, the likelihood of the largest player being a contributor remains fairly high even when the required threshold level is substantially high since this player still possesses a good chance to make a pivotal contribution up to this point. The decreasing rate of probability of the second largest player to contribute is much larger than that of the largest player in this group. Finally, the probability of the smallest player also decreases very rapidly soon after one moves from a low level to a high level of uncertainty.

<Table 5.2> Raleigh--Durham--Chapel Hill, NC (MSA):
Concentrated Decision Making System Case

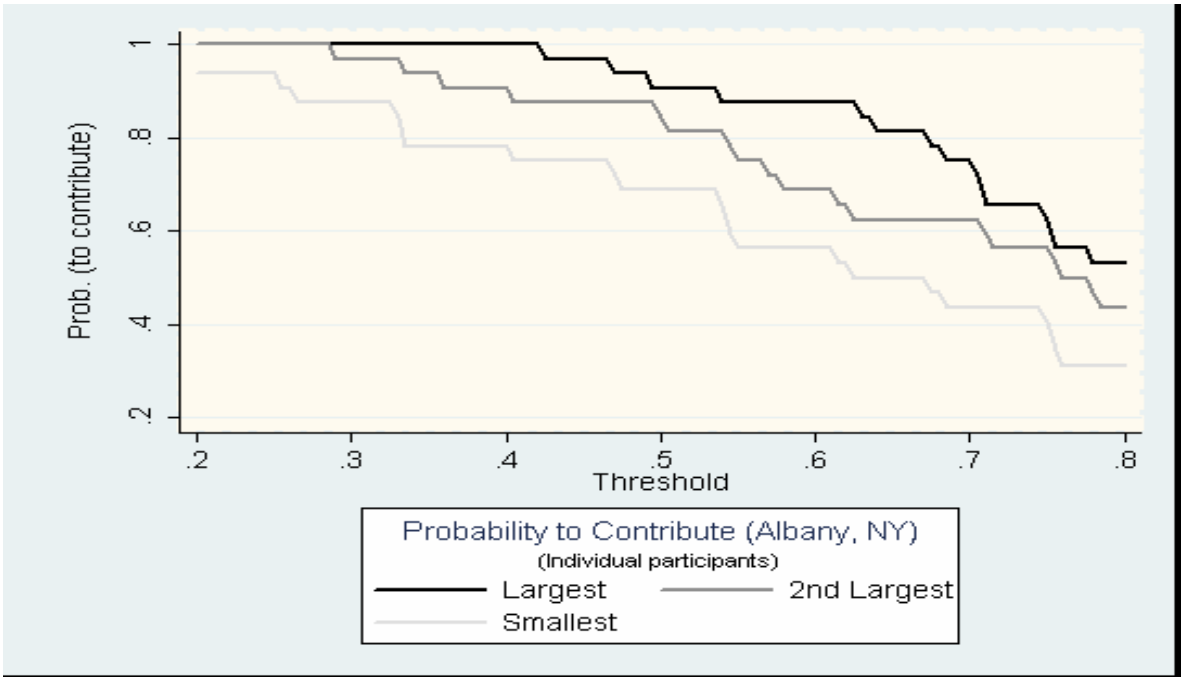
County	Population	Percentage
Wake County	627,846	52.85%
Durham County	223,314	18.80%
Johnston County	121,965	10.27%
Orange County	118,227	9.95%
Chatham County	49,329	4.15%
Franklin County	47,260	3.98%
Total	1,187,941	100%

<Table 5.3> Albany-Schenectady-Troy, NY (MSA):
Decentralized Decision Making System Case

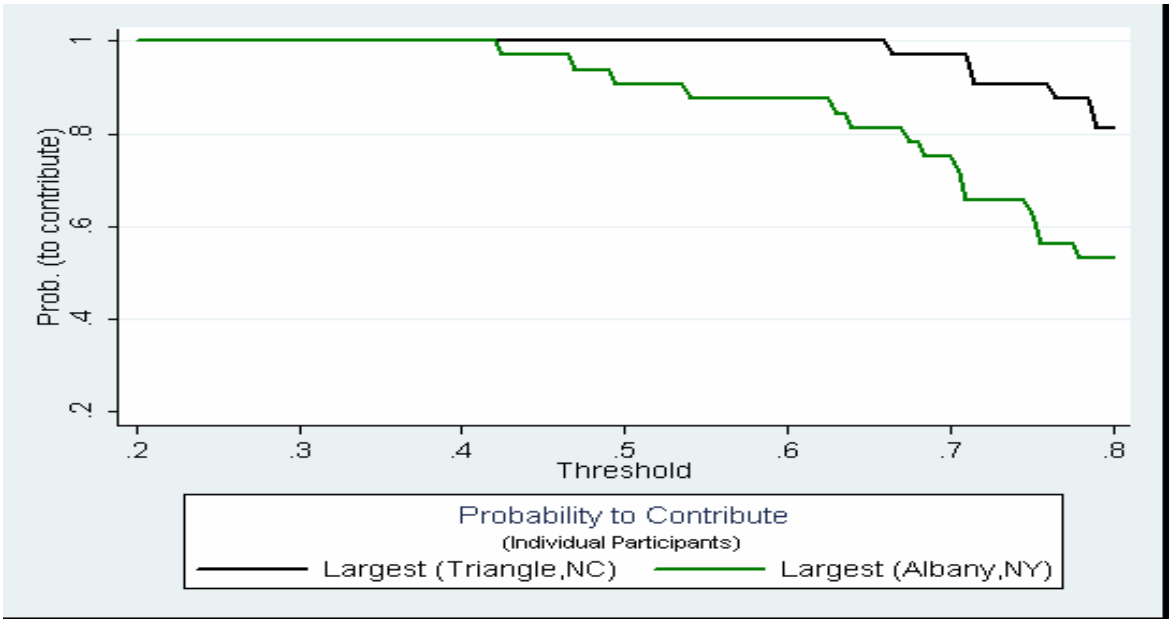
County	Population	Percentage
Albany County	294,565	33.64%
Saratoga County	200,635	22.91%
Rensselaer County	152,538	17.42%
Schenectady County	146,555	16.74%
Montgomery County	49,708	5.68%
Schoharie County	31,582	3.61%
Total	875,583	100%



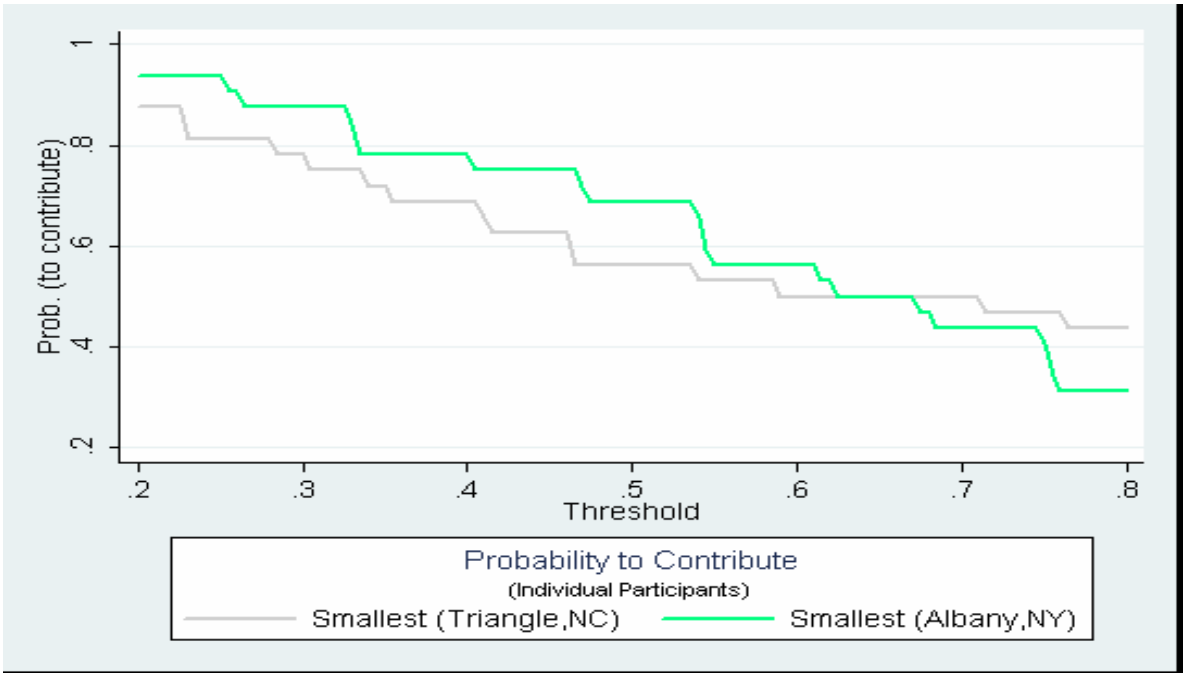
<Figure 5.3> Probability to Contribute in Raleigh--Durham--Chapel Hill, NC (MSA)



<Figure 5.4> Probability to Contribute in Albany-Schenectady-Troy, NY (MSA)



<Figure 5.5> Probability to Contribute of the Largest Actor in Both Metro Areas



<Figure 5.6> Probability to Contribute of the Smallest Actor in Both Metro Areas

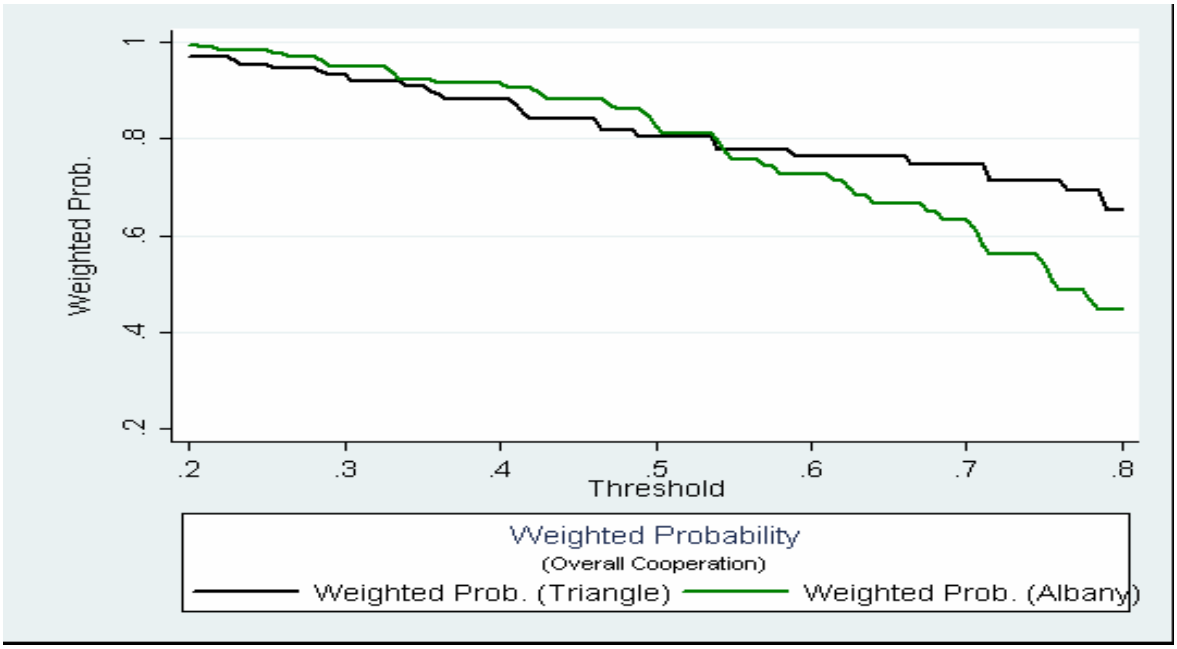
The overall pattern that individual players' probability to contribute decreases as uncertainty (threshold requirement) becomes larger remains unchanged in a more decentralized decision making system as shown in Figure 5.4. However, actors in a more decentralized system respond more sensitively to uncertainty on the threshold level: even the largest player becomes unsure whether its contribution makes a critical change so that the likelihood to do so drops significantly when the required threshold levels get large. On the other hand, one interesting finding regarding a more decentralized system is that when the threshold level is relatively low, the smallest player shows more willingness to contribute than the smallest player in a concentrated system. This is because its decision is still relatively critical to build a coalition when uncertainty (threshold level) is relatively low (in this case, about 2/3 of the total population). Since every jurisdiction prefers retaining local autonomy and is motivated to play a pivotal role in collaborative decision making, a more decentralized system may allow a greater variety of options to choose from. However, this advantage of a fragmented decision making system becomes a burden when there is a great level of uncertainty around collective outcomes. As shown in Figure 5.6, the probabilities that the smallest player will be a contributor become reversed so that a concentrated decision making system is likely to outperform a decentralized decision making system.

Next, based on these individual probabilities of cooperation, we also can calculate and represent the collective probability of contribution. Collective probability to provide public good can be determined by a weighted average of individual probabilities to contribute as follows:

$$P = \sum_{i}^{i=n} w_i \cdot p_i \ ,$$

where w_i is a weight of player i in terms of population within a jurisdiction and p_i is a probability of this player being a contributor. This basically indicates how likely a collaborative outcome-- a regional partnership-- will be established based on individual choices as the levels of uncertainty grow. Figure 5.7 illustrates the likelihood of the collective provision of public good in both examples of metropolitan areas. Figure 5.7 generally confirms the discussions about individual probabilities in the previous figures: First, the probability of public goods being provided decreases as uncertainty becomes a more important consideration. When the uncertainty level is

relatively low, the overall probability of collaboration for a much fragmented system is slightly higher than the probability of collaboration in a more concentrated decision making system, up to around a 50% level of threshold. However, when threshold point becomes larger and larger, a concentrated decision making system demonstrates a relatively higher probability to collaborate than the case of a more fragmented system. This implies that there exist two conflicting mechanisms regarding metropolitan fragmentation: when the threshold point (uncertainty around collective action) is low, a more fragmented decision making system may be superior since it allows game participants more autonomy and flexibility to create various forms of collaboration at their own discretion. However, when the threshold level (uncertainty around collective action) is substantially high, the existence and commitment of leading actors with large endowments may be more critical to provide public goods. In other words, the weighted probabilities of both cases are reversed around the 50 % threshold level in these particular samples of metropolitan areas and this demonstrates that there is no absolutely better social system in terms of fragmentation. This study also has investigated whether this finding holds for other examples and cases with different *HHI*, and found that all of those comparisons confirm the similar pattern that a more fragmented system performs better under a low level of uncertainty, whereas a concentrated system has a better position to overcome a high level of uncertainty. Most of all, however, the patterns may vary depending on the degree of concentration and the level of uncertainty around decision making, and this provides different policy implications for regional collaboration depending on the environment in which local jurisdictions within metropolitan areas are embedded.



<Figure 5.7> Weighted Probability to Contribute in Both Metro Areas

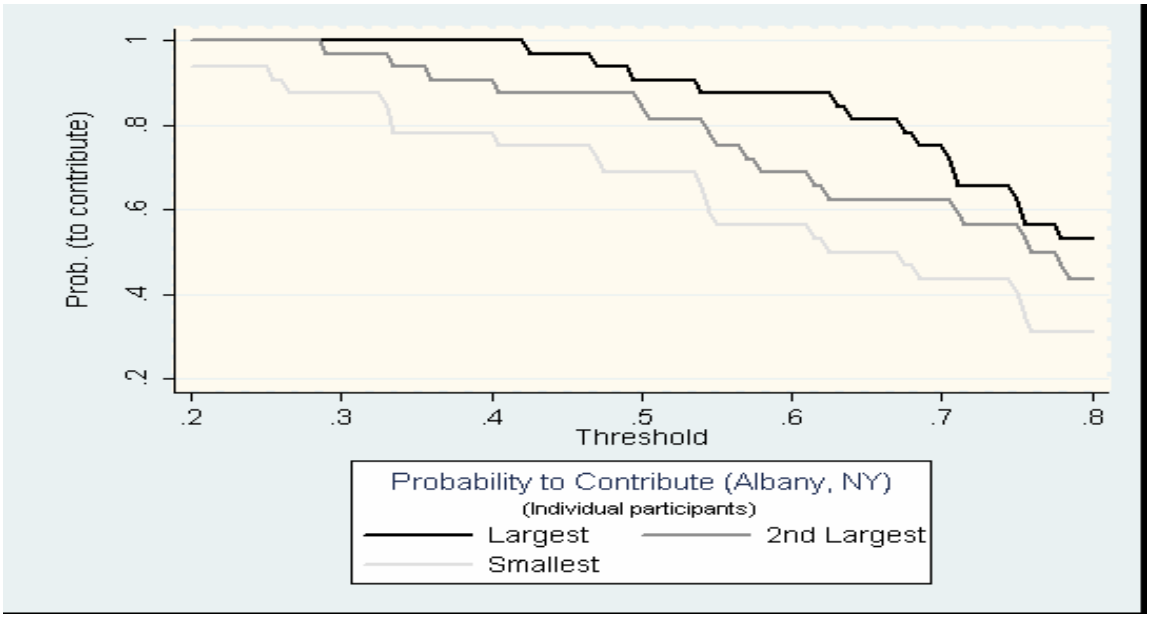
In general, model prediction in the previous figures confirms in a limited way the proposition of *concentration of decision-making system (distribution of weights among players)* suggesting that the joint provision of a public good is more likely to be achieved when there is a dominant local jurisdiction than when there are several local governments whose influences are relatively evenly distributed. Rather, this proposition is true only when there is a high level of uncertainty around collaboration. When there is a dominant player in the group who can play a leading role in overcoming a critical mass problem, then this actor has a better position to attract additional member to build a minimal provision coalition. However, if uncertainty is not an important consideration, the motivation to become a pivotal actor for collaboration formation tends to grow, and, thus, a more fragmented decision-making system serves better by allowing a higher level of local autonomy and flexibility to the local jurisdiction. This suggests that we have a more complex mechanism in place regarding fragmentation, and this must be studied more rigorously by empirical validation. Based on discussions in this chapter, this dissertation will develop a more sophisticated testable hypothesis regarding fragmentation in the next chapter and empirically test it by focusing on non-linear relationships.

By the same token, the impacts of group size (the number of players in the group) could be complicated as well if our speculation that the fragmentation effect is not linear holds. On the one hand, although there is a leading player in the group, an increase in the number of players generally undermines the position of this dominant player, which will likely lead to failure to formulate collaborative outcomes. Without a vivid leader, an increase in the number of players leads to an increase in uncertainty around collective action due to an increment in transaction costs for negotiation, bargaining, and monitoring activities. On the other hand, the larger the group size gets, the greater the benefits each participant can claim once their conflicting interests are well managed and collaborative outcomes are realized. In other words, a large number of players are more likely to maximize benefits from economies of scale. In addition, an increase in group size deludes individual actors with the possibility that they can play a pivotal role in overall decision making. This implies that increasing group size can also positively affect the level of collaboration. Therefore, the overall impact of group size seems to be conflicting and non-linear as well. The next chapter will discuss the non-linear relationship between group size and collaboration level in more detail focusing on the benefits and costs of having a large number of players. Then, the chapter will test the non-linear pattern of group size effect developed empirically.

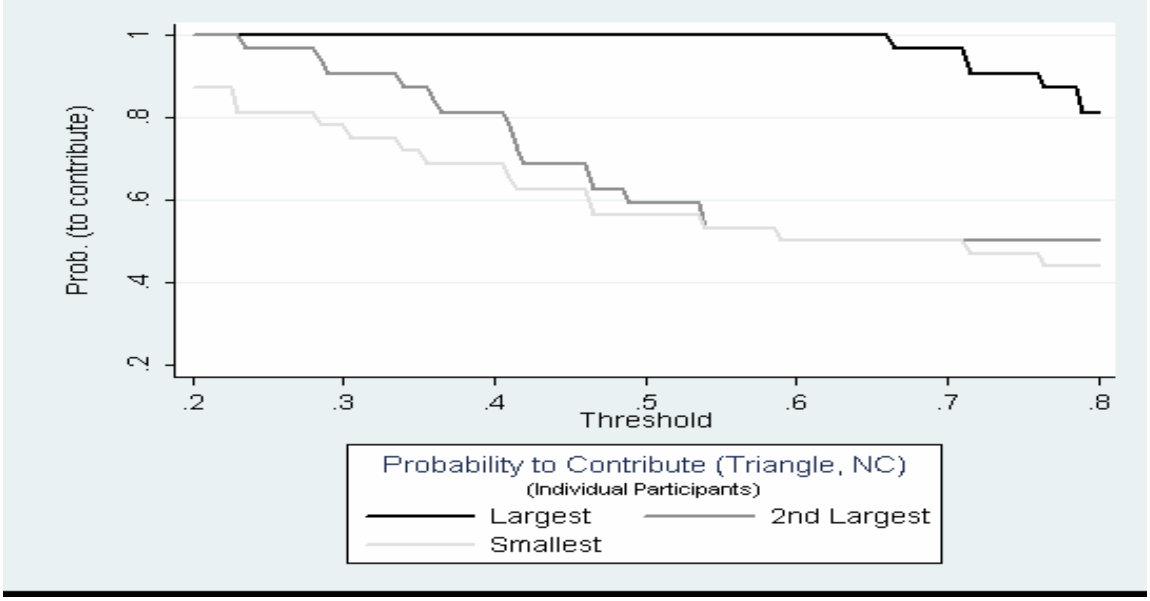
Next, by using same analysis, we can compare how different benefits/costs structures create different outcomes with respect to the individual and collective probabilities of contributing toward the public good provision. This analysis also uses the same examples of Raleigh--Durham--Chapel Hill, NC and Albany-Schenectady-Troy, NY. However, at this time the comparative statics improves the benefits and costs ratio about 20%, and predicts how likely individual players decide to contribute and, thus, how likely a coalition is ultimately formulated.

Figure 5.9 shows the baseline model of the Albany-Schenectady-Troy, NY metropolitan area, which has a relatively decentralized decision making system as we defined previously. In contrast, when we allow an improved benefits/costs ratio in this baseline model, the probabilities of individual players being contributors generally increase across the players. Figure 5.10 demonstrates that although players are less likely to be contributors as uncertainty around the threshold becomes larger, players tend to contribute more when benefits are higher and costs are lower. This implies that if a player perceives either that benefits from collaboration are larger than once expected or that costs involved in collective action become smaller, this actor finds the

contributing strategy more attractive, which increases the probability of contribution in this analysis. This comparison generally holds in a more concentrated decision making system such as Raleigh--Durham--Chapel Hill, NC as well.

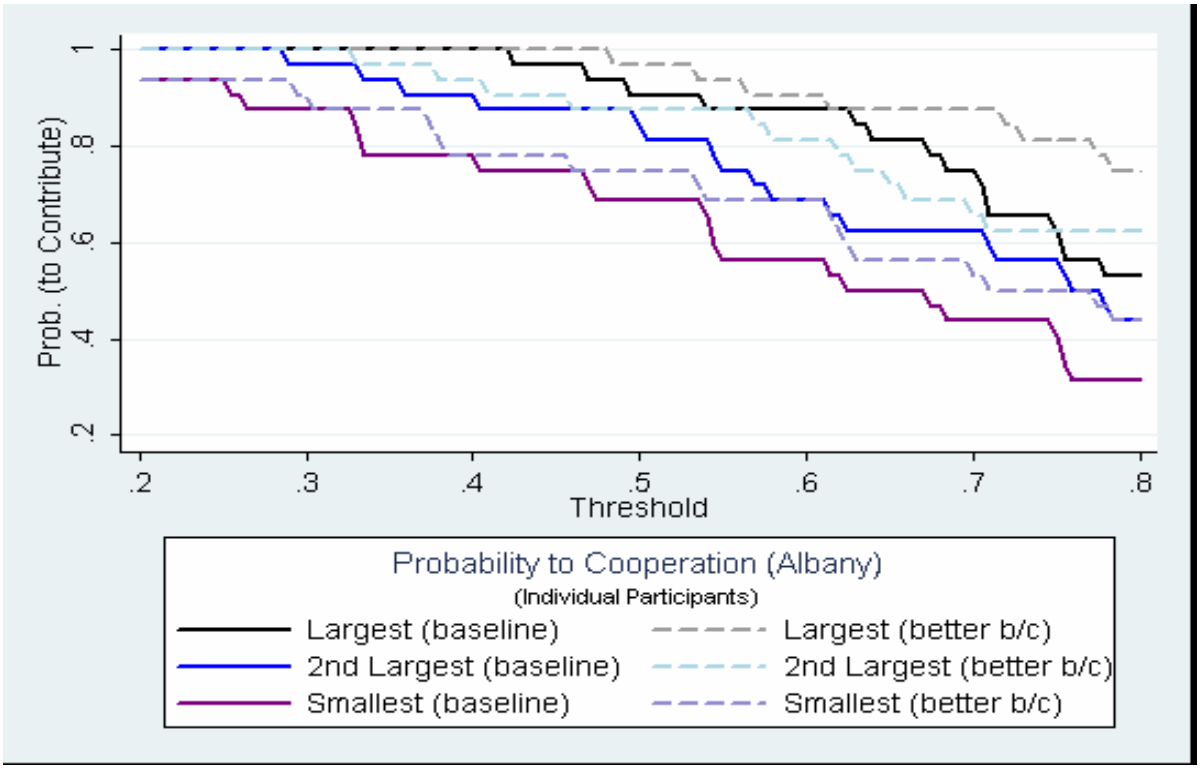


<Figure 5.8> Probability to Contribute in Albany-Schenectady-Troy, NY (MSA)

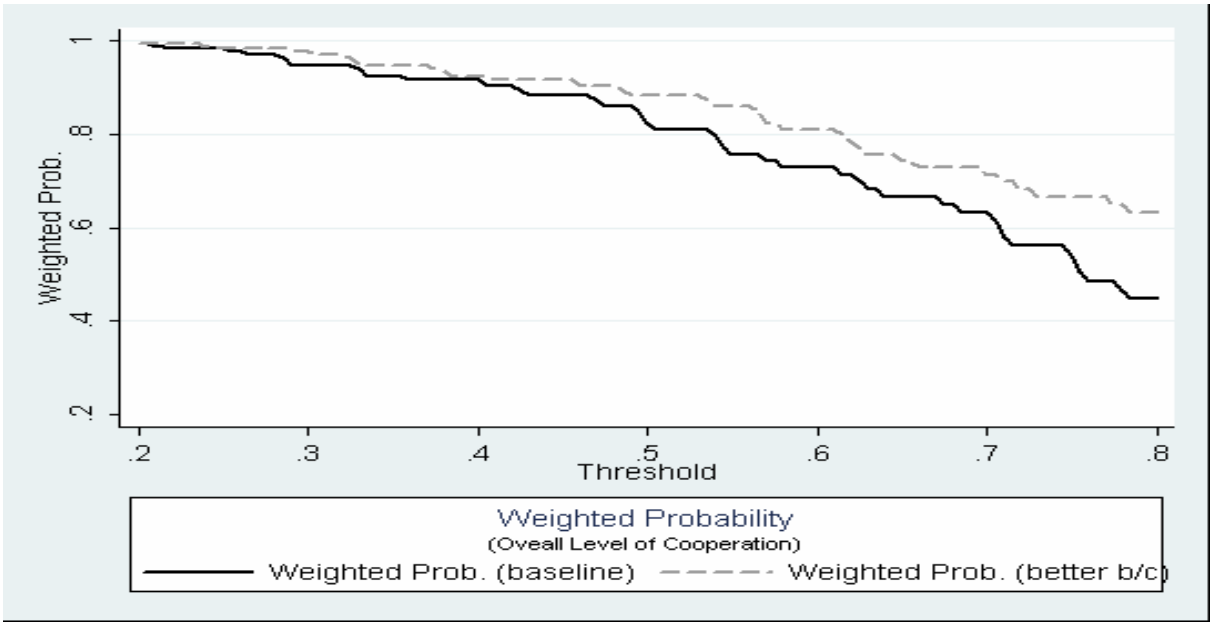


<Figure 5.9> Probability to Contribute in Raleigh--Durham--Chapel Hill, NC (MSA)

Figures 5.8, 5.9, and 5.10 compare more directly how the behavior of each player changes under different benefits/costs structures. Figure 5.10 generally confirms the prediction that improved benefits/costs ratio induces players to contribute more, regardless of the types of actors in the model. Overall, an individual player's probability to contribute decreases as uncertainty around the threshold gets larger. However, the decreasing rate of contribution probability is relatively small when they feel that benefits are higher and costs are lower. This individual decision leads to a better chance of establishing collaborative outcomes in a system level as illustrated in Figure 5.11. As we have already observed, the collective probability of collaborating is generally higher when the benefits/costs ratio is high than when it is low.



<Figure 5.10> Probability to Contribute in Albany-Schenectady-Troy, NY (MSA): comparison under different benefits/ costs structures



<Figure 5.11> Weighted Probability to Contribute in Albany, NY (MSA): comparison under different benefits/costs structures

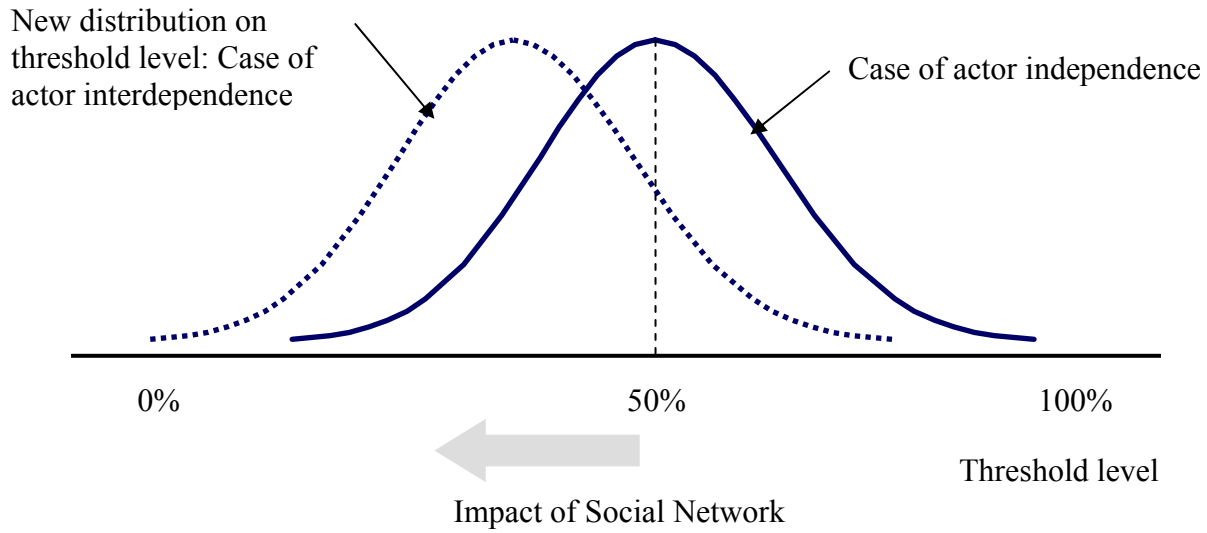
In this sense, the prediction results in this analysis generally confirm the second set of propositions positing that as the benefit gets higher and the cost becomes lower, players feel the collaborative strategy more attractive so that regional partnership is more likely to be built. While the payoffs from collective action define both collective and selective incentives from collaboration, relative profitability needs to be higher in order for collective action to be feasible (Begossi 1998; Warren and Pinkston 1998). In a more practical sense, any type of assistance from external institutions which can either increase realized benefits or decrease potential costs involved in coordination of activities may play an important role in overcoming a collective action dilemma.

This chapter develops a model of a discrete public good provision in a more formal way, derives some working propositions which can be used as baseline for empirical testing in the next stage, and illustrates that those propositions are consistent with model predictions. Based on these propositions, this dissertation research will conduct empirical analysis by employing regional partnership formation data in the next chapter. In that chapter, the first part of the empirical model will focus on showing how well a game theoretic prediction fits real empirical data regarding regional partnership, and the second part of the empirical model will attempt to

analyze the other factors that can possibly contribute to game transition from the traditional collective action dilemma to regional collaboration.

5.6 Brief Sketch of Model Extension to Embedded Social Networks Structure

Although the formal model developed in this chapter addresses actor heterogeneity, it still has a limitation in capturing the impact of social relations among actors on the level of collective action by assuming independence of participants. Therefore, many rules of the game including threshold level are still considered to be determined exogenously. However, a social networks structure in which actors are embedded, in fact, can act as an institutional arrangement which decreases the uncertainty around collective action. If we can think of threshold level in this model as the minimal level of credible commitment required for collaboration, the perceptions of interdependence among actors may decrease the level of credible commitment requirements, which generally leads to the left-shifts of the distribution function on threshold level in the model suggested in this chapter. This implies that an embedded social networks structure is more likely to alter the rules of game (more accurately, threshold level) endogenously.



<Figure 5.12> Brief Sketch of Formal Model Extension

CHAPTER 6
EMRIRICAL ANALYSIS of REGIONAL PARTNERSHIPS FOR ECONOMIC DEVELOPMENT

6.1 Overview of Empirical Analysis

The purpose of this chapter, as a second stage of the research design, is to rigorously validate the propositions developed in the previous chapter regarding theories of collective action based on empirical evidence and, further, investigate the impact of the contextual and relational aspect of collective situations on regional partnership formation. Therefore, the empirical models to be tested in this chapter start with a very simple one focusing solely on factors derived from theories of collective action in the previous chapter, and then, proceed to more sophisticated ones that capture a different context and degree of interdependence along with controlled factors.

More specifically, this empirical analysis investigates how the essence of collective action dilemmas affect success or failure to achieve common goals in regional economic development and what other determinants besides game theoretic explanation are likely to transform a game setting from a zero-sum to an assurance one. This study particularly views a regional partnership for economic development as one of alternative governing mechanisms to address collective action situations among local jurisdictions. In other words, regional partnership for economic development is an artifact that requires interaction and collaboration among stakeholders who reside in the areas to overcome self-interest motivations. Therefore, the presence of a regional partnership, a dependent variable in this study, is considered to well represent a higher level of collaboration on common interests.

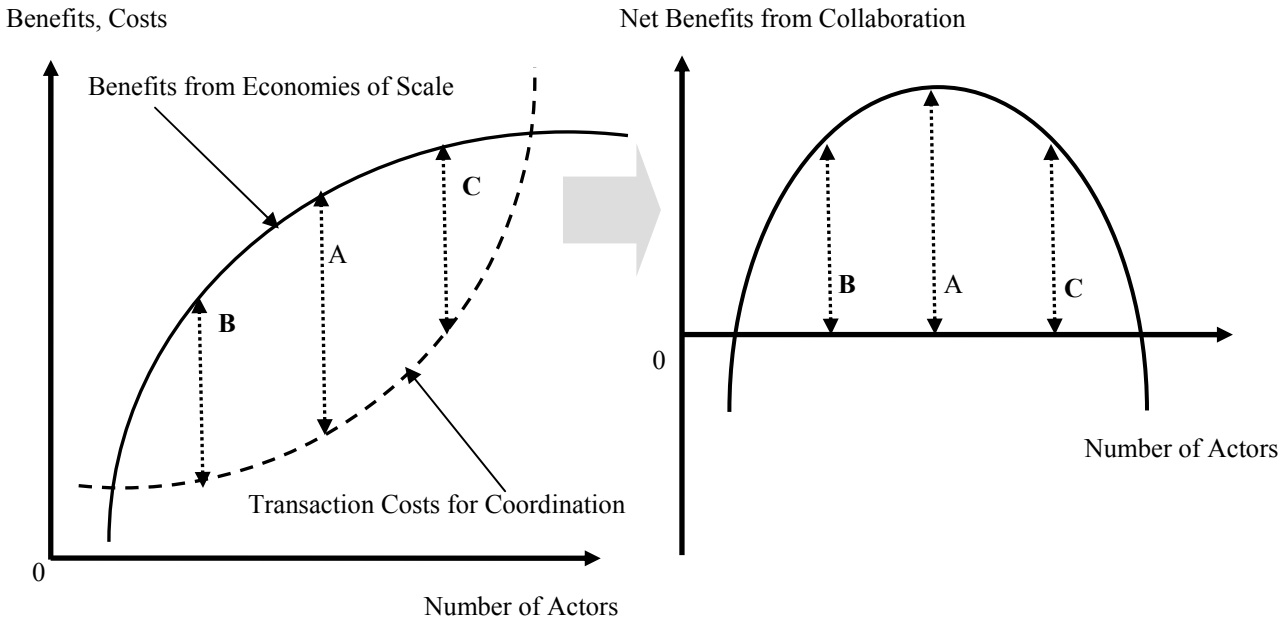
Among many factors, this study highlights three important components that determine the level of collaboration in the regions: the nature of collective action, the contextual attributes of regional areas, and the relational network characteristics within regional areas. As mentioned earlier, this study first tests the simplest model addressing the influence of collective action dynamics, and, later, develops more complicated testable models including both the contextual attributes and relational network characteristics of communities. Each model proposed in this chapter will be estimated and tested by using a simple logit maximum likelihood estimation.

6.2 Hypotheses

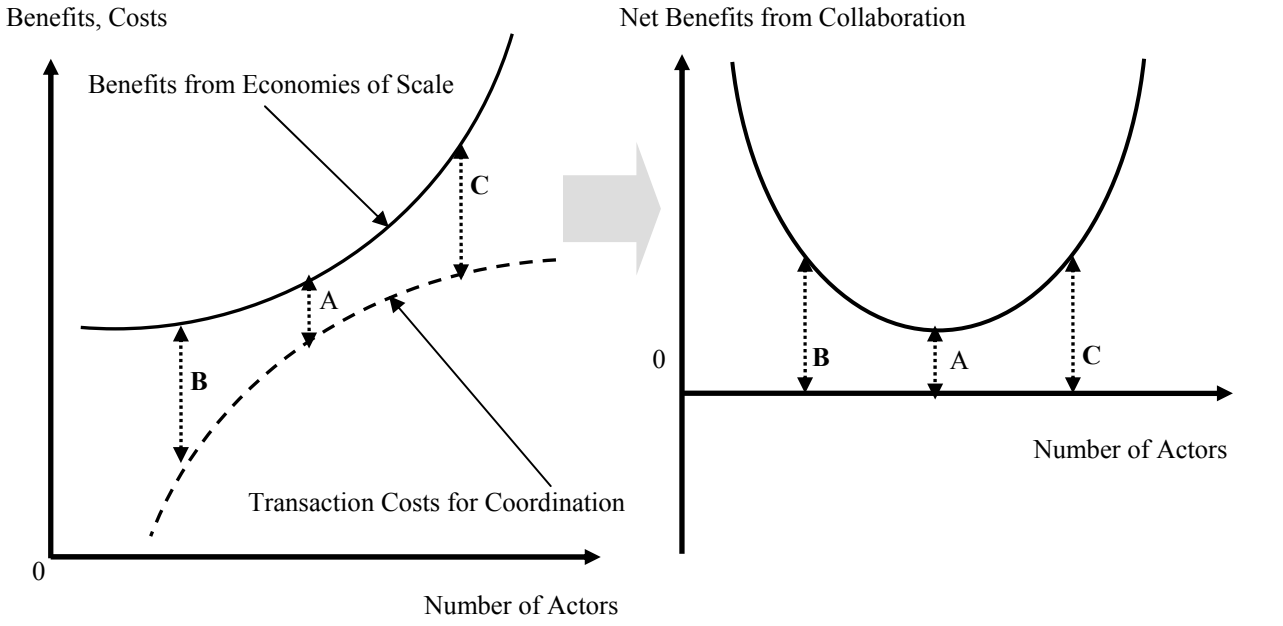
Based on the theoretical framework stated in the previous chapters and the formal model developed in Chapter 5, this chapter develops several working hypotheses explaining how some factors determine success or failure of voluntary interjurisdictional collaboration, especially regional partnership formation. While some factors have been studied separately in other literatures, integration of formal modeling approach and the statistical analysis should help investigate the proposed hypotheses in a more systematic and complete manner.

6.2.1 The Nature of Collective Action

Based on the formal model developed and reviewed in Chapter 5, this chapter begins by developing hypotheses explaining how the nature and composition of participants affect the decision-making of individual actors and their interactions. In general, collaboration among potential competitors is difficult to create and sustain, especially when there is a high level of uncertainty and complexity. When there are a large number of actors involved, uncertainty increases since no single actor can determine the configuration of collaboration in a deterministic way and actors may have to interact with more actors under much more scenarios imaginable. The literature in the field of collective action argues that group size should be small to decrease coordination costs (Ostrom 1990; Issac and Walker 1988). Coordination problems for collective action increase with the number of participants. As pointed out in the previous chapter, however, there exists a conflicting mechanism regarding group size effect at the same time. That is, the larger the group size, the greater the benefits each participant can claim once their conflicting interests are well managed and collaborative outcomes are realized. Therefore, a large number of players are more likely to enhance benefits from economies of scale. This implies that we cannot determine the overall impact of group size on the level of collaboration until we fully compare transaction costs in coordinating the conflicting interests of a large number of actors and potential benefits from achieving economies of scale.



<Figure 6.1> Group Size Effects: An Inverse U-Shape Case



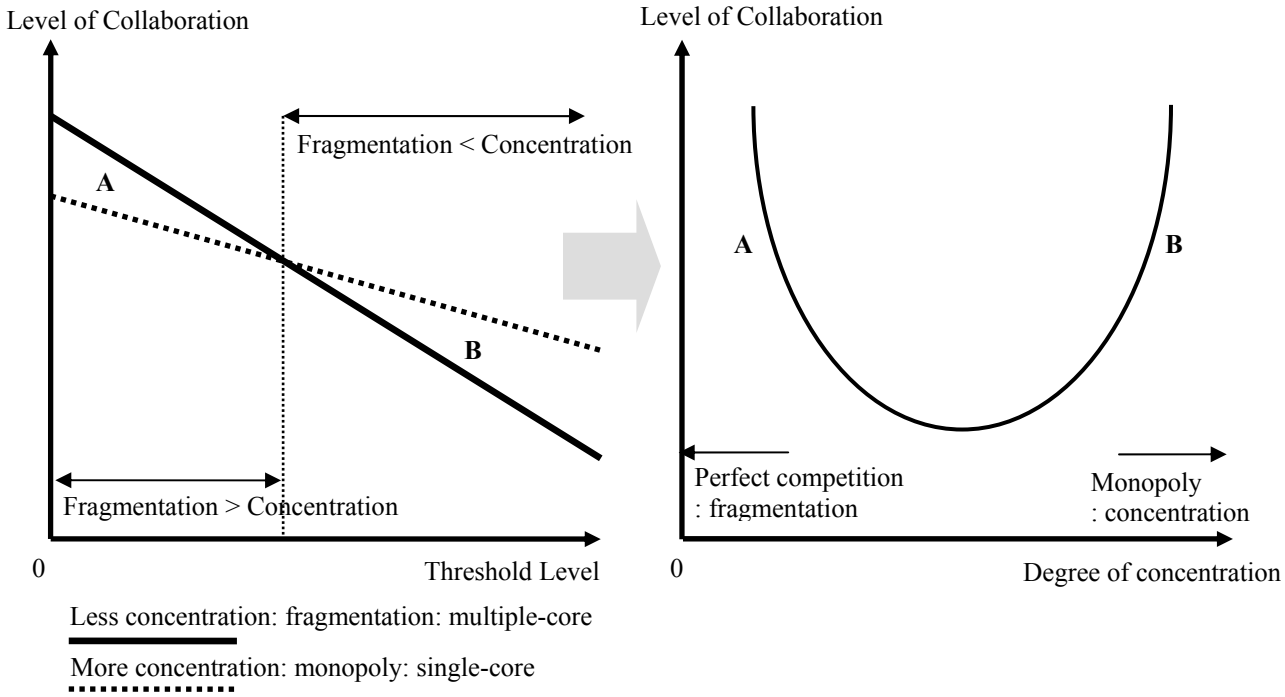
<Figure 6.2> Group Size Effects: A U-Shape Case

Figures 6.1 and 6.2 demonstrate the origin of the non-linear relationship between group size and level of collaboration. In each figure, the solid curves represent the potential benefits from achieving economies of scale and the dotted curves indicate the transaction costs for coordinating the interests and activities of participants. And, more importantly, the net benefits from collaboration are the difference between potential benefits from economies of scale and transaction costs for coordination, which is represented as a vertical distance between solid and dotted curves. The greater the net benefits from collaboration, the more collaborative are the actors. Both figures also demonstrate that the impact of group size differs depending on the shape of the benefits and costs curves.

In particular, Figures 6.1 and 6.2 show two important examples of group size effects. In Figure 6.1, the benefits from economies of scale increase but at a decreasing rate, whereas transaction costs for coordination increase at an increasing rate. As a result, the net benefit is relatively smaller both when there are a few people in the group and too many actors as members and, thus, the level of collaboration is also likely to be low in both cases. Many group size effect literatures are based on this scenario (Ostrom 1990; Issac and Walker 1988; Olson 1965). However, if the benefit curve is convex and the cost curve is concave as shown in Figure 6.2, having either a few or a much larger number of actors in the group would be advantageous for establishing collaboration. While addressing and testing the shape of both the benefits and costs curves is another important theoretical question, it is well beyond the scope of this dissertation. Instead, the results from the empirical analysis conducted in this dissertation are expected to provide a great starting point to more rigorously extend the investigation of group size effect. In order to examine the impact of group size, the empirical analysis includes a measure of the number of participants, which is indicated by the standardized total number of municipal and county governments (the number of municipal and county governments divided by 10,000 people) in each metropolitan area.

On the other hand, one possible way of overcoming collective action is that a dominant player emerges and acts as a leader to reduce uncertainty and complexity. In this vein, Oliver (1993) and Markus (1990) point to the concept of critical mass as a determining factor in generating public goods. Critical mass refers to the point where sufficient interest is created that the majority of people contribute to the realization of the public good. Then, an actor is in a better position to attract additional members to build a minimal provision coalition. However,

there is also a conflicting mechanism of metropolitan fragmentation. Since every jurisdiction wants to become a pivotal decision maker and exercise a maximum level of local control and autonomy while pursuing common goals, a more fragmented might serve better for their interests if local governments address the soft type of collaboration which requires a small number of participants. Therefore, this largely depends on the level of uncertainty around collaboration. Figure 6.3 more clearly shows this conflicting mechanism derived from the formal model in Chapter 5. In Figure 6.3, the solid line represents predicted level of collaboration under a more fragmented system and the dotted line indicates the predicted level of collaboration under a more concentrated system from the formal model in the Chapter 5. In this figure, a fragmented system performs better when the threshold (uncertainty level) is low (on the left-side of vertical line). On the other hand, a concentrated decision making system tends to generate a higher level of collaboration under greater uncertainty (on the right-side of vertical line). This implies that the impact of fragmentation on collaboration is not linear and depends on the level of the threshold as shown in the Figure 6.3. This argument is also consistent with Rawlings's (2003) conceptualization and empirical findings on the impact of fragmentation. In the later empirical analysis, the degree of concentration will measure by *(normalized) Herfindahl-Hirshman Index.*



<Figure 6.3> Impact of Decision Concentration

In addition, relative profitability needs to be high in order for collective action to be feasible (Begossi 1998; Warren and Pinkston 1998). This also implies that the greater the underlying economic problems of a region and the larger the aggregate gains from collaborative development, the greater the likelihood of establishing a collaborative arrangement to do so (Lubell et al. 2002; Ostrom, Gardner, and Walker 1994; Libecap 1989). Therefore, the perception of more expected benefits with less cost, including the transactional interaction involved, increases the probability of a player being a part of the collaboration.

(H_{a1}) Group Size Effect: Number of Players

The impact of group size is non-linear: As the number of players grows, benefits from economies of scale increase while transaction costs for coordination also increase. Therefore, the level of collaboration largely depends on the magnitude of benefits and costs of increasing membership. When considering the contexts and social relations of collective action together, voluntary regional development organization is less likely to be established both when there are too few and too many potential actors in the group.

(H_{a2}) Concentration of Decision-making System

The impact of fragmentation is non-linear: a voluntary regional development organization is more likely to emerge 1) where there is a dominant local jurisdiction in a region, and 2) when the decision making power of local governments is relatively evenly distributed. The impact of fragmentation largely depends on the level of uncertainty around collaboration.

(P_{a3}) Benefit and Cost Structure

As the benefit gets higher and the cost becomes lower, players feel the collaborative strategy more attractive so that regional partnership is more likely to be built.

<Table 6.1> Summary of Predictions: revised from Chapter 5

Variables	Direction	Measures
Number of players	Non-linear -(+)	Number of localities (cities and counties) per 10,000
Degree of decision concentration	Non-linear +(-)	HHI (Herfindahl-Hirshman Index)
Benefits	+	Economic needs: per capita income, growth rate, unemployment rate
Costs	-	Transaction costs (Actor attributes heterogeneity: race disparity, income disparity, education disparity)

6.2.2 Contextual Attributes of Community

Contextual attributes represent game actors' preferences, power, and resource endowments that prevent the simple game theoretic model from reflecting the complexity of collective action around policy making. Indeed, in many cases, players are not identical, and, thus, actors under very similar settings may create different outcomes in public good provisions depending on their attributes.

For instance, building upon the theory of homophily, institutional collective action (ICA) scholars argue that political and economic similarity leads to a cooperative strategy more easily since actors seek to forge relationships to others with whom they share similar attributes (Feiock, Steinacker and Park 2009; Ibarra 1992; Carley 1991). Since collaboration among actors with individual incentives is plagued with many complicated sub-problems such as information, bargaining, and enforcement problems, the extant literature on interlocal cooperation views that transaction costs generally become larger in cases of less homogeneous actors in the potential alliance. Homogeneity across jurisdictions best captured by the degree of demographic homogeneity may represent low political and economic dissents over certain policy issues. Homogeneity within jurisdictions is also important since aggregating and matching preferences might be difficult when communities share a minimal level of policy interests and individuals and sub-groups of actors pursue only their own selective incentives (Feiock 2007).

On the other hand, the formal rules that allow local jurisdictions to create alternative governance systems are an important part of regional collaboration. For example, state level

rules, particularly home rule provisions, provide the legal basis for partnership as well as the institutional alternatives for achieving development goals so that they encourage or support intergovernmental collaboration (ACIR 1993). Likewise, the discretionary authority available to local governments provided by each state plays an important role in organizing voluntary collaboration in the areas of finance, function, personnel, and structure (ACIR 1981; Berman and Martin 1988).

Again, collaboration is more likely to emerge when actors perceive the potential benefits of cooperation and coordination. The greater the embedded problems, the more benefits local governments can enjoy once collaboration turns out to be successful. In this sense, their own economic and fiscal stress is more likely to generate demands for collaboration among participants in order to share the resources and achieve economies of scale. This implies that economic and demographic conditions affect the actors' consideration on regional collaboration as they create a great deal of demands. For instance, demands for regional collaboration may be influenced by population changes. The growth rate in population is an important indicator of establishing suitable economic development strategies. Since a decrease in population is more likely to result in a reduction in tax bases, a limitation on budget control, and diseconomies of scale, it is generally considered a challenge for local governments. Under fiscal pressure, local jurisdictions with a decreased or slower growth rate in population are more likely to seek an external opportunity to create collaborative solutions. Second, economic growth is a more direct indicator of embedded economic problems with which local jurisdictions are confronted. Local governments with weak economic positions anticipate that choosing collaborative strategies may enable them to access expertise and resources of neighboring jurisdictions so that they can achieve common goals for improving economic difficulty. Since potential benefits from a regional approach may be greater in jurisdictions with more serious economic hardship once it is realized, local governments with slow economic growth are likely to have a greater demand for collaboration.

Finally, it is expected that the development and policy interests between two or more areas are more likely to be binding when there are many commuters who live in one city and work in another. Therefore, regions with the larger portion of commuters who reside in one county, yet, work in another will have a greater chance of having regional partnerships in metropolitan areas.

(H_{b1}) Homogeneity of Community

The more homogeneous a community is across jurisdictions, the more likely a voluntary regional development organization will be established.

(H_{b2}) Degree of Local Authority

The more discretionary authority to local governments is allowed, the more likely regional partnerships for economic development will emerge.

(H_{b3}) Demand for Collaboration

The more economic and fiscal stress a community experiences, the more incentives local jurisdictions have to overcome hardship by creating regional approaches.

(H_{b4}) Shared Life Style and Interests

The more people's life style and interests are binding within the community, the more regional partnerships for economic development are likely to be established to address common interests.

6.2.3 Relational Network Characteristics of Community

Evidence from extant studies suggests that policy networks play significant roles in coordinating decision making among decentralized actors (Meier and O'Toole 2002; Provan and Milward 1995; Schneider et al. 2003). Embedded relationships with other local jurisdictions shape a regional network which establishes the reputation and reciprocity of information and resources based on the reliability and competencies of prospective partners over time (Gulati and Gargiulo 1999). The structure of relational arrangements among local jurisdictions plays an important role in reducing potential transaction costs by institutionalizing information-reaching mechanisms and the paths of credible commitments among actors.

As one type of institutional arrangement mitigating the transaction costs of collective action, policy networks have been perceived to play two contrasting roles: while one emphasizes the mechanism of cooperation among tightly-clustered actors, the other focuses on the extensive process of coordination by linking diverse actors and enhancing shared information and

resources among potential participants (Feiock and Scholz 2008; Feiock 2007; Scholz, Berardo, and Kile 2008).

Strong-tie arguments emphasize the advantage of a clustered network especially when there is the potential problem of free-ride by localities involved in the joint delivery of collective goods. From the transaction cost perspective, a densely-clustered network reduces the cost of monitoring and enforcing the compliance of participants. A densely-clustered network of intergovernmental relationships enhances social capital by facilitating reciprocity, trust, and commitment to the social norms (Coleman 1988). In this sense, cooperation is more likely to occur in densely-clustered networks.

On the other hand, the weak-tie arguments emphasize the possibility of exploring a broader set of possible gains from other local governments and other individuals or organizations by being connected to coordinators and unexploited partners. Information-bridging allows local governments to reap the advantage of innovation not available within a more densely-clustered network. On a system level, some actors' opportunities could improve the welfare of a society as a whole by being better connected with each other and better provided with a broader set of useful information and possible gains from interaction with network entrepreneurs. In addition, since accurate information on opportunities for cooperation and who may be a good partner is necessary for local government units to collaborate, the value of a link might be particularly high if actors are not closely connected with each other (Feiock 2007; Burt 2005).

(H_{c1}) Tightly-clustered Networks

A densely-clustered network of intergovernmental relationships enhances social capital by facilitating credible commitments so that voluntary collaboration among actors is more likely to be built.

(H_{c2}) Information-bridging Networks

The better connected to a broader set of useful information and possible gains from interaction with network entrepreneurs, the more likely are regional approaches for economic development to emerge.

6.3 Data

The empirical analysis in this chapter examines how the nature of collective action, contextual attributes of regional areas, and relational network characteristics within communities affect the presence of voluntary regional partnerships in the context of US metropolitan areas. For the statistical validation focusing on multilateral voluntary organizations in metropolitan areas, data is obtained from various sources.

First of all, the unit of analysis in this study is a US metropolitan area. As mentioned in the Chapter 4, US metropolitan areas is relatively ideal setting in studying regional governance in that 1) their social, economic, legal, and cultural characteristics are simple and unique enough to construct self-sufficient single social systems, and 2) their compositions are complex enough to capture the underlying mechanisms of fragmentation and competition so that it is worthwhile to explore complexity in greater detail. This dissertation research follows the convention that Metropolitan Statistical Area (MSA) has been extensively used to capture the boundaries and characteristics of a metropolitan area. In particular, this study uses 1999 definition of MSA produced by the Federal Office of Management and Budget (OMB). While the definitions on MSA keep updated by OMB, this study deliberately chooses a definition prior to US Population Census 2000 since data collected by metropolitan areas in many categories is often based on population information of US Census 2000.

The dependent variable, formation of regional partnerships, is measured by *whether or not a regional partnership for economic development had established in a metropolitan area* between 1990 and 2007. This binary variable equals 1 if a metropolitan area had adopted at least one regional partnership for economic development during that span and equals 0 if a metropolitan area did not. For this analysis, the listing of regional partnerships in 1997 originally collected by Olberding (2002) is extended though 2007 based on the resources of *Site Selection Inc. ("The Geo-Economic Index")*, *the International Economic Development Council*, online source from Economic Development Directory (http://www.ecodevdirectory.com), and various online website searches.

Independent variables in the model encompass the conceptual elements developed in the game theoretic and social network theories discussed in the previous sections. Those components are categorized into three parts: the nature of collective action, contextual attributes of community, and relational network characteristics.

The nature of collective action is captured by both the group size variable and its composition variable. The group size variable represents a measure of the number of participants as indicated by the total number of municipal and county governments in each metropolitan area. This is obtained from a 1999 definition of Metropolitan Statistical Area (MSA) produced by the Federal Office of Management and Budget (OMB). On the other hand, the group composition variable measures the degree of concentration of collective decision making in metropolitan areas, in other words, whether or not there are dominant governments in each metropolitan area. As one way of capturing the degree of concentration in a collective decision making system, this study uses the *Herfindahl-Hirshman Index,* originally developed to capture the degree of market competition, or conversely the degree of monopoly. While market share indicates concentration of producers in the market competition context, both population size and economic size are considered to reflect the concentration of local jurisdictions on the decision making process in the regional governance context. Here, population is chosen to measure the base for decision making power. The data for the population of each jurisdiction in each metropolitan area is collected from US Population Census 2000 and this data, sorted and matched by metropolitan areas, is used to calculate *Herfindahl-Hirshman Index*. Since there is a high chance that the number of jurisdictions affects the index, itself, we need to normalize this index for direct comparison. In this sense, a normalized *Herfindahl-Hirshman Index* allows us to compare the extent to which collective decisions will be made by one or more major participants.

Contextual attributes of metropolitan areas are measured by several institutional variables and socioeconomic variables. First, state level rules, particularly home rule provisions, provide the legal basis for partnership as well as the institutional alternatives for achieving development goals. Considering that related state laws encourage or support intergovernmental collaboration, this variable is collected from the *Advisory Commission in Intergovernmental Relations (ACIR)* survey (1993). *ACIR* reports (1993) and Krane et al. (2001) provide an index capturing the degree of home rule permitted to municipal and county governments in the areas of administrative, fiscal, functional, and structural autonomy, respectively.

Second, the socioeconomic similarity of potential partners is a critical element of successful partnership formation. The theory of homophily views homogeneity among participants as essential to the maintenance of collaborative efforts by minimizing conflicting interests regarding economic development. The success of collaborative activity largely depends

on how well conflicting interests among participants are addressed and this, in turn, is likely to cause internal political and operational barriers from the local management perspective. The homogeneity of participants is captured by the variation in municipal median income and percentage of white non-hispanics among the local jurisdictions in each metropolitan area. In order to measure the degree of difference in these categories, a dissimilarity index between central cities and their suburban areas will be employed and calculated. Economic dissimilarity is particularly important in that if there are greater differences in prosperity between the central city and its suburban areas, they have different incentives regarding a collaborative approach for economic development. For instance, with economies that are relatively strong and prosperous, suburbs have little desire to create an extra-governmental institution to promote economic development (Agranoff and McGuire 2003). In that case, collaboration is difficult to achieve or sustain (Feiock 2007; Feiock, Steinacker and Park 2009). These two measures are collected from *US Census 2000 data*, data released both from *Lewis Mumford Center for Comparative Urban and Regional Research* and *Department of Housing and Urban Development (HUD)*.

Third, it is also expected that citizens and local jurisdictions are more interested in collaborative activities when there are many commuters who live in one city and work in another. Then, the development and policy interests between two areas are more likely to be binding. The portion of commuters, which is measured by the percentage of citizens in each metropolitan area who reside in one county, yet, work in another are collected from *county-to-county worker flow files*, as a part of *US Census 2000* and calculated by metropolitan areas.

In addition, several community economic characteristics and control variables are included in the analysis. To measure community economic characteristics-- economic need in a metropolitan area-- the analysis includes the unemployment rate, median household income and government revenue per capita in each metropolitan area. Both the unemployment rate and median household income are collected from the *US Census 2000* and government revenue per capita is obtained from the *Census of Government Finance2002*. The size of metropolitan area is related to the magnitude of economies of scale. Size is measured by the population of the metropolitan areas, which is also collected from the *US Census 2000*. To control for regional effect, regional dummy variables are included based on the definition of the Federal Office of Management and Budget (OMB) as well.

The third set of independent variables capture the relational aspects of collective action participants. These variables are based on the theoretical framework developed by Burt (2005), whose explanation focuses mainly on closure and brokerage within network structure.

The concept of closure is measured mainly by the level of trust throughout previous collaborative economic development activities in each metropolitan area. Interaction opportunity to build trust is captured by the following: 1) *Whether or not a metropolitan area has traditionally chosen the regional approach prior to regional partnership*. A public development corporation reflects the old style of regional development. Previous experience of regional collaboration for economic development is expected to increase the level of collaboration at current point (Thurmeier and Wood 2002; Olberding 2002). This variable is also collected from *Site Selection Inc. ("The Geo-Economic Index")*, *the International Economic Development Council*, *National Association of Development Organizations (NADO),* and various online website searches. 2) The degree of utilization of interlocal fiscal transfers is measured to capture the horizontal reciprocal interaction among local jurisdictions. Interlocal cooperation exists when a local government engages in voluntary service agreements with one or more other local governments to resolve the interdependencies faced in service provision (Feiock and Shrestha 2007; Thurmeier and Wood 2002). The experience of collaboration in any particular policy area will increase the willingness to engage in other collaborative activities with the same actors. In this regard, the level of closure within a metropolitan area can be measured by the level of interlocal agreements among local jurisdictions. Cities' interlocal service expenditure measures their cooperation with other governments (Bikers and Stein 2004; Campbell and Glynn 1990; Rawlings 2003). In order to capture the strength of reciprocal relations between local governments, this dissertation includes both interlocal service expenditure (out-degree) and revenue (in-degree). Government expenditures and revenues through interlocal agreements are reported in the *Census of Government Finance2002*.

On the other hand, extensive information-bridging networks increase brokerage, because they are not bounded by traditional solutions and numerous institutional alternatives are readily explored (Burt 1992). From the nested game perspective, the information-bridging network structure enables actors to choose among a wider set of alternatives by enlarging its strategy space instead of confining itself to a choice among available strategies (Tsebelis 1990). Brokerage is expected to create value by exposing participants to a non-redundant variation in

information and resources. Weak-tie networks among participants within a metropolitan area are measured by the following two variables: 1) the number of non-governmental economic development organizations in the metropolitan areas. The roles of non-governmental organizations are important since regional partnership is often supported by the participation of both private and non-profit sectors. Urban regime theory also supports that regional-wide business power forces regional-wide cooperation (Stone 1989; Imbroscio 1997). Therefore, non-governmental organizations are also expected to play a critical role in facilitating the formation of regional partnerships for economic development. The number of chambers of commerce and number of development organizations capture the private sector power for economic development policy making. Data sources come from the list of regional organizations in the *Census of Government*, *National Association of Regional Councils (NARC)* report, and *Nation-wide Chambers of Commerce Director,* and the list of regional organizations is matched by metropolitan areas. 2) The number of the non-profit professional and civic organizations is also included in this research. The role of non-profit organization as a public entrepreneur has significantly increased for several decades. As entrepreneurial brokers, non-profit organizations explore a broader set of possible options within, and perhaps beyond jurisdictions and communities by redirecting useful resources and information, which can coordinate each player's decision and its consequence. In this sense, the number of non-profit professional and civic organizations measures the level of potential entrepreneurial activities and is derived from *County Business Patterns* in *U.S. Economic Census.*

<Table 6.2> Variables, Measures, and Data Sources

Category	Variable	Measure	Data Sources
Dependent Variable	Formation of regional partnerships	*Whether or not a regional partnership for economic development has been established in a metropolitan area between 1990 and 2007*	*Site Selection Inc.("The Geo-Economic Index")*, *the International Economic Development Council*, and online website searches
Nature of Collective Action Variable	Group Size	Number of participants as indicated by the total number of municipal and county governments in each metropolitan area	*U.S. Office of Management and Budget 2007*, *U.S. Census 2000*
	Group Composition	Degree of concentration on collective decision making in metropolitan areas, i.e., *whether or not there are dominant governments in each metropolitan area*	*Herfindahl-Hirshman Index, U.S.Census population 2000*

<Table 6.2> Continued

Category	Variable	Measure	Data Sources
Contextual attributes Variable	Home Rule Provision	*Whether or not state governments provide legal basis partnership as well as the institutional alternatives for achieving development goals*	*ACIR reports 1993 State Laws Governing Local Government Structures and Administration*
	Median Income Dissimilarity	Degree of dissimilarity in median income among jurisdictions	*Dissimilarity index, U.S. Census population 2000*
	Race Dissimilarity	Degree of dissimilarity in percentage of white among jurisdictions	*Dissimilarity index, U.S. Censu, U.S. Census population 2000*
	Percentage of Commuters	Portion of commuters measure the percentage of citizens in each metropolitan area who reside in one county yet work in another	*County-to-county worker flow files in U.S. Census population 2000*
	Unemployment Rate	Employment rate of each metropolitan area	*U.S. Economic Census*
	Population change (90-00)	Population change rate from 1990 to 2000	*U.S. Population Census 1990 and 2000*
Control Variable	Population Size	Overall population in each metropolitan area	*U.S. Population Census 2000*
	Race	Percentage of white non-hispanic among population	*U.S. Population Census 2000*
	Median Household Income	Average median household income across the metropolitan area	*U.S. Population Census 2000*
	Regional Dummy	The location of metropolitan areas	
Relational Network Variable	Governmental Development Corporation	*Whether or not a metropolitan area has traditionally chosen the regional approach prior to regional partnership*	*Site Selection Inc.("The Geo-Economic Index")*, *the International Economic Development Council*, and online website searches
	Horizontal Financial Transfer	Reciprocal relations among local governments measured by interlocal service expenditures and revenues	*Census of Government Finance*
	Non-government Development Organizations	Measure of private sector power for economic development policy making, i.e., *number of chamber of commerce and number of development organization*	*nation-wide chamber of commerce directory* and matched by metropolitan area
	Establishment of Non-profit Organizations per Capita	The role of non-profit organization as a public entrepreneur measured by the number of non-profit development organization per capita	*County Business Patterns* in *U.S. Economic Census*

6.4 Methods

Simple logistic regression is used to examine the predictors of regional partnerships for economic development, and Tables 6.5 and 6.6 present the estimated logistic regression coefficients, odds rations, and their standard errors. The dependent variable-- the presence of regional partnership-- is a binary variable, which equals 1 if a metropolitan area had adopted at least one regional partnership for economic development and equals 0 if a metropolitan area have not. For the multivariate models shown, Model I includes only the effects of collective action variables to investigate how the nature of collective actions affects the presence of regional collaboration. Model II adds some control variables such as population and regional dummies in order to examine how the predictions of Model I differ when we control for community characteristics. Finally, Model III includes additional variables representing both the contextual attributes and relational networks of metropolitan areas to test integrated explanations provided throughout this dissertation.

In addition, this dissertation employs the robust approach which basically computes standard errors for maximum likelihood estimates that are not sensitive to model misspecification. According to White (1982), comparison coefficients between usual and robust estimations of the covariance matrix of maximum likelihood estimators provides a test of model specification. Therefore, this dissertation also reports results based on robust standards errors.

6.5 Variables and Descriptive Statistics

Table 6.3 shows measures for each variable and its hypothetical relationship with regional partnership formation based on literatures and theoretical arguments in the previous chapters.

<Table 6.3> Variables, Measures, and Expected Relationships with Dependent Variable

Variables	Measures	Expectation
<Dependent Variable>		
Regional Partnership	Coded 1 if a metropolitan area has regional partnership for economic development; 0, otherwise	

<Table 6.3> Continued

Variables	Measures	Expectation
<Independent Variables>		
Nature of Collective Action		
Number of jurisdictions	Number of jurisdictions per 10,000 people in a metropolitan area	Non-linear
Degree of decision concentration	Degree of monopoly decision, 1 representing monopoly and 0 indicating fragmentation	Non-linear (U-shape)
Contextual Attributes		
Home Rule Provision	Coded 1 if state governments provide legal basis for partnership formation; 0, otherwise	+
Median Income Dissimilarity	Median income difference between central cities and their suburbs	-
Race Dissimilarity	Race (percentage of white non-hispanic) difference between central cities and their suburbs	-
Percentage of Commuters	Percentage of people who commutes within a metropolitan area	+
Unemployment Rate (00)	Unemployment rate in 2000	+
Population change (90-00)	Population change between 1990 and 2000	+
Control Variables		
Population Size	Log of population in 2000	
Race	Percentage of white non-hispanic among metropolitan population	
Median Household Income	Log of median household income	
Regional Dummies	South, Midwest, Northeast; West area is a base group	
Relational Network		
(*Tightly-clustered network)*		
Economic development corporation	Coded if there has been old form of regional development corporation; 0, otherwise	+
Interlocal revenues	Percentage of jurisdictions which receive interlocal revenue within a metro area	+

<Table 6.3> Continued

Variables	Measures	Expectation
Interlocal expenditures	Percentage of jurisdictions which spend interlocal expenditure within a metro area	+
(Information-bridging network)		
Non-government development organizations	Number of non-government development organizations per 10,000 people	+
Professional non-profit organizations	Number of establishments in professional non-profit organization per capita	+
Civic non-profit organizations	Number of establishments in civic non-profit organization per capita	+

Table 6.4 provides summary statistics for all variables used in this analysis. With regard to the data structure, two issues need to be addressed before testing the series of models. First, there are some variables (the number of jurisdictions, the number of non-government development organizations, and the number of professional/civic non-profit organizations) which indicate a high correlation with population (or log transformation of population). Although this issue can be easily handled simply after dividing these variables by population, it is relatively unclear whether the number of jurisdictions per capita captures the idea of metropolitan fragmentation better than the number of jurisdictions, itself. However, this dissertation views that the number of jurisdictions per capita still represents the concept of metropolitan fragmentation well while being free from the multicollinearity issue. On the other hand, median household income dissimilarity and race dissimilarity also show a high correlation. Since it is likely that both variables measure different aspects of transaction costs, both variables are included, but with their interaction term. Second, as discussed earlier, since this study hypothesizes that group size and fragmentation effect have non-linear relationships with regional partnership formation, the empirical analysis in this chapter also includes the squared term of both variables.

<Table 6.4> Descriptive Statistics

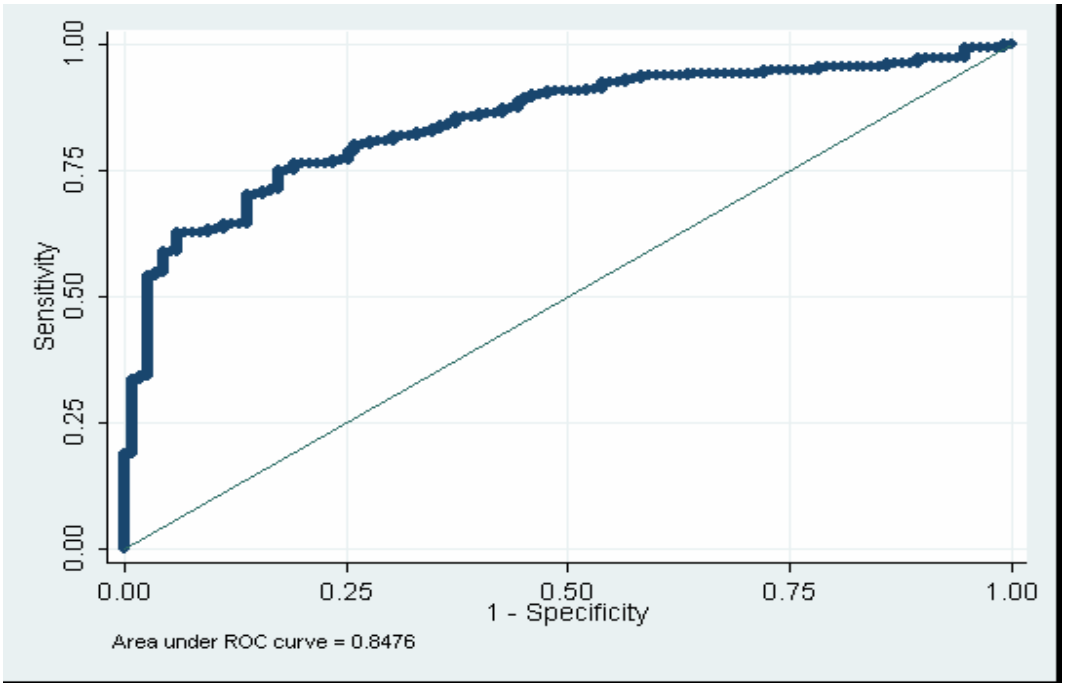
	Obs.	Mean	Std. Dev	Min	Max
Number of jurisdictions	276	1.009	.856	.024	5.607
Degree of decision concentration	276	.688	.299	.053	1
Home Rule Provision	276	.728	.446	0	1
Median Income Dissimilarity	276	.172	.135	0	.636
Race Dissimilarity	276	15.815	14.085	0	78
Percentage of Commuters	276	.485	.094	0.292	.915
Unemployment Rate	276	5.804	1.789	2.6	13.1
Population change	276	.136	.122	-.074	.833
Population Size	276	12.623	1.103	10.946	16.788
Race	276	75.217	17.319	4.9	97.3
Median Household Income	276	10.913	.152	10.325	11.387
Regional Dummies (South)	276	.438	.497	0	1
Regional Dummies (Midwest)	276	.257	.438	0	1
Regional Dummies (Northeast)	276	.127	.333	0	1
Economic development corporation	276	.322	.468	0	1
Interlocal revenues	276	.385	.216	0	0.909
Interlocal expenditures	276	.146	.139	0	0.8
Non-govt. development organizations	276	.162	.142	0	1.091
Professional non-profit organizations	276	2.641	1.298	.908	11.826
Civic non-profit organizations	276	1.360	.497	.220	7.171

6.6 Result of Analysis

While the predictors of regional partnership formation for economic development are examined by using simple logistic regression, the empirical analysis in this dissertation employs three sub-models to control some of the effects discussed in the previous chapters. For the multivariate models shown, Model I considers only the effects of collective action variables to investigate how the nature of collective actions affects the presence of regional collaboration. Model II attempts to examine how predictions of Model I differ when we control some of the community characteristics by adding control variables such as population, median income, race, and regional dummies. Finally, Model III includes additional variables representing both

contextual attributes and relational networks of metropolitan areas to test integrating explanations provided throughout this dissertation. This essentially shows how contextual and relational factors help game transition change from zero-sum to assurance game.

There are numerous ways of testing model fits of logit analysis suggested by an extant body of literatures. While many of them posit that psuedo-R^2 is not the best way of describing model fits, this analysis reports models' psuedo-R^2 since it makes it much easier to evaluate the goodness of model specification in a traditional sense. However, the explanatory power of models in logistic regression is more critically dependent upon how accurately models predict the events of 0s and 1s based on estimated coefficients in the models. For this reason, this dissertation reports the percentage of correctly predicted outcomes based on the models. On the other hand, the percentage of correctly predicted outcomes also has its limitation in a sense that decision criteria between 0s and 1s are somewhat arbitrary. Therefore, this analysis counts primarily on the ROC (Receiver-Operator Curve) approach for evaluating model fits. It is generally considered as a good model when the area under ROC is greater than 0.6. ROC values in each model in this analysis show 0.649, 0.702, and 0.848, respectively.



<Figure 6.4> ROC (Receiver-Operator Curve) of Model 3: reporting goodness of fit on logit

Next, this dissertation reports coefficients and their robust standard errors to represent the direction and magnitude of impact of each variable in this logit analysis. In order to help us interpret the impacts in terms of changes in the odds, the logit analysis also reports the odds ratio of each variable. According to this approach, we can interpret the coefficients as indicating that for a unit change in each variable, we expect the logit change by its coefficient, holding other variables constant. However, even the odds ratio is not so intuitive especially when we consider the non-linear variables and interaction terms. Therefore, this analysis also computes the predicted probabilities of regional partnerships being formed by controlling the changes in some of the key variables, and reports the outcomes.

With respect to the nature of collective action variables, group composition (a degree of decision concentration, measured by *NHHI*) is statistically significant across the models tested in this analysis (Models I, II, and III). This finding is also consistent with a non-linearity hypothesis (especially, a U-shape curve) that is suggested in other literatures and this dissertation (Rawlings 2003). In other words, a voluntary regional development partnership is more likely to emerge in both cases 1) where there is a dominant local jurisdiction, and 2) when the decision making power of local governments is relatively equally diffused.

Figure 6.5 demonstrates this non-linear relationship between regional collaboration and the degree of decision concentration more clearly. While controlling for their populations, the probabilities of regional partnership being established in this figure are decreasing up to the point where the degree of concentration *(NHHI)* becomes around 0.8 (more exactly, the first derivative gives us 0.85 as a turning point in this case). Then, the probabilities increase again when there is a heavy decision concentration. In addition, the results of three different groups with respect to population size in Figure 6.5 imply that the likelihood of regional partnership formation is greater when there is more population in the region. This suggests that there is an equally good chance to establish voluntary regional development partnerships in both metropolitan areas 1) where there is a dominant local jurisdiction, and 2) when the decision making power of local governments is relatively equally diffused. However, the way to mitigate collective action problems may be different between the two rather extreme cases.

<Table 6.5> Results of Logit Analysis: coefficients and standard errors

	Model I Coefficient (Robust std. error)	**Model II** Coefficient (Robust std. error)	**Model III** Coefficient (Robust std. error)
Nature of Collective Action			
Number of jurisdictions	-0.041 (0.367)	0.316 (0.486)	0.795 (0.535)
Number of jurisdictions squared	0.048 (0.082)	-0.012 (0.092)	-0.081 (0.096)
Degree of decision concentration	-8.476*** (3.303)	-7.902** (3.690)	-7.792* (4.132)
Degree of decision concentration squared	4.928*** (2.423)	4.690* (2.663)	5.411* (3.008)
Contextual Attributes			
Home rule provision			-0.405 (0.435)
Median income dissimilarity		-2.270 (1.836)	-0.263 (1.990)
Race dissimilarity		-0.033 (0.024)	-0.059** (0.029)
Race dissimilarity*Income dissimilarity		0.164** (0.082)	0.145* (0.086)
Percentage of commuters			-0.324 (2.857)
Unemployment rate			0.084 (0.152)
Population change		0.289 (1.280)	0.900 (2.046)
Control Variables			
Population Size		0.273 (0.212)	0.410 (0.325)
Race		0.004 (0.011)	0.012 (0.016)

<Table 6.5> Continued

Median household income		-0.384	0.973
		(1.248)	(2.051)
Regional dummies (South)		-0.786*	-1.062*
		(0.423)	(0.643)
Regional dummies (Midwest)		-0.276	-0.796
		(0.526)	(0.704)
Regional dummies (Northeast)		-1.111*	-2.327***
		(0.673)	(0.862)
Relational Network			
(Tightly-clustered network)			
Economic development corporation			3.372***
			(0.537)
Interlocal revenues			0.292
			(0.863)
Interlocal expenditures			2.024*
			(1.150)
(Information-bridging network)			
Number of development organizations			0.032
			(1.110)
Professional non-profit organizations			-0.373
			(0.247)
Civic non-profit organizations			0.901*
			(0.510)
constant	3.416***		-14.680
	(0.957)		(22.417)
N (Number of Observations)	276	276	276
Log-likelihood	-175.481	-167.268	-129.451
Psuedo-R^2	0.064	0.108	0.309
McKelvey&Zavoina's R^2	0.130	0.243	0.548
% predicted			
Area under ROC	0.649	0.702	0.848

* p<0.1, ** p<0.05, *** p<0.01

<Table 6.6> Results of Logit Analysis: odds ratios and standard errors

	Model I Coefficient (Robust std. error)	**Model II** Coefficient (Robust std. error)	**Model III** Coefficient (Robust std. error)
Nature of Collective Action			
Number of jurisdictions	0.960 (0.376)	1.371 (0.696)	2.215 (1.295)
Number of jurisdictions squared	1.050 (0.101)	0.988 (0.105)	0.922 (0.106)
Degree of decision concentration	0.000*** (0.000)	0.000** (0.001)	0.000* (0.002)
Degree of decision concentration squared	138.117** (332.068)	108.890* (283.009)	223.833* (725.548)
Contextual Attributes			
Home rule provision			0.667 (0.288)
Median income dissimilarity		0.103 (0.194)	0.768 (1.698)
Race dissimilarity		0.967 (0.024)	0.943* (0.029)
Race dissimilarity*Income dissimilarity		1.178 (0.101)	1.156 (0.111)
Percentage of commuters			0.897 (2.897)
Unemployment rate			1.088 (0.162)
Population change		1.335 (1.774)	2.460 5.219
Control Variables			
Population Size		1.314 (0.298)	1.506 (0.473)
Race		1.004 (0.011)	1.012 (0.016)

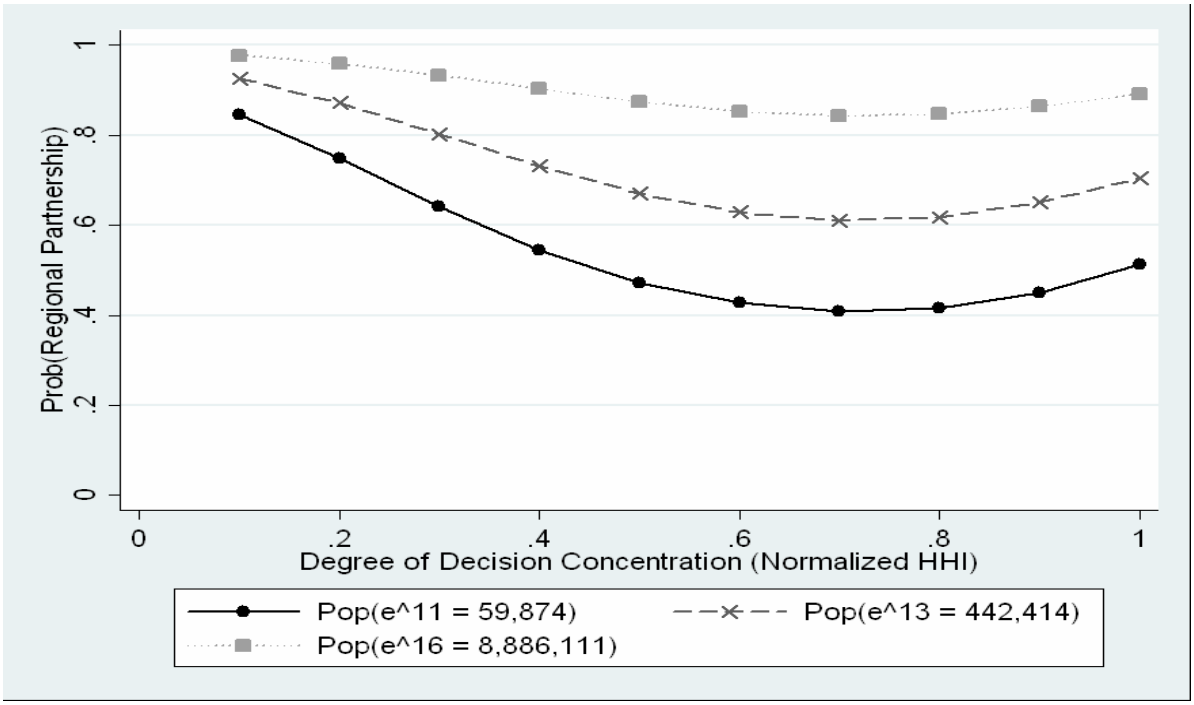
<Table 6.6> Continued

Median household income		0.681	2.647
		(0.845)	(5.218)
Regional dummies (South)		0.455*	0.346*
		(0.198)	(0.219)
Regional dummies (Midwest)		0.759	0.451
		(0.399)	(0.312)
Regional dummies (Northeast)		0.329*	0.098***
		(0.216)	(0.082
Relational Network			
(Tightly-clustered network)			
Economic development corporation			29.131***
			(16.067)
Interlocal revenues			1.339
			(1.152)
Interlocal expenditures			7.568
			(9.633)
(Information-bridging network)			
Number of development organizations			1.032
			(1.207)
Professional non-profit organizations			0.689
			(0.175)
Civic non-profit organizations			2.462*
			(1.294)
Constant			
N (Number of Observations)	276	276	276
Log-likelihood	-175.481	-167.268	-129.451
Psuedo-R^2	0.064	0.108	0.309
McKelvey&Zavoina's R^2	0.130	0.243	0.548
% predicted			
Area under ROC	0.649	0.702	0.848

* p<0.1, ** p<0.05, *** p<0.01

As discussed in Chapter 3, there has been disagreement in the theories and empirical evidence on metropolitan governance about the impact of central city dominance. Generally, public choice theories view that metropolitan areas that are heavily dependent upon their central cities are more likely to collaborate partly because smaller jurisdictions have less alternatives other than seeking cooperation with central cities to provide public services due to economies of scale. Some empirical studies find that areas with dominant actors are more likely to have collaborative regional solutions than metropolitan counterparts with a more independent polycentric system (Foster 1997). To the contrary, a regionalist approach considers that central city dominance discourages regional collaboration. While there generally have been conflicting interests between central cities and their suburban jurisdictions such as poverty, minority issues, crime, and so on, the social problems that peripheral actors want to address are more likely to be neglected when central cities dominate their metropolitan area and try to provide most needed services for themselves, obviating the need to collaborate with others (Rawlings 2003).

Although dominant actors who are taking a leading role have a better position to attract additional members to build a minimal provision coalition under great uncertainty, local jurisdictions always want to exercise a maximum level of autonomy and control in their economic development decisions. Since every jurisdiction is eager to become a pivotal decision maker while pursuing common goals, a more fragmented system might serve their interests better if regional collaboration requires a small number of participants and addresses the soft type of policy coordination under relatively less uncertainty. This means that there is a distinct trade-off between local autonomy and uncertainty around collective action dilemmas. Therefore, overall configurations of regional partnership heavily depend upon the level of uncertainty and the extent to which local jurisdictions attempt to retain their local autonomy. This ultimately provides different practical implications on how collective action dilemmas can be overcome depending on situations in which local participants reside.

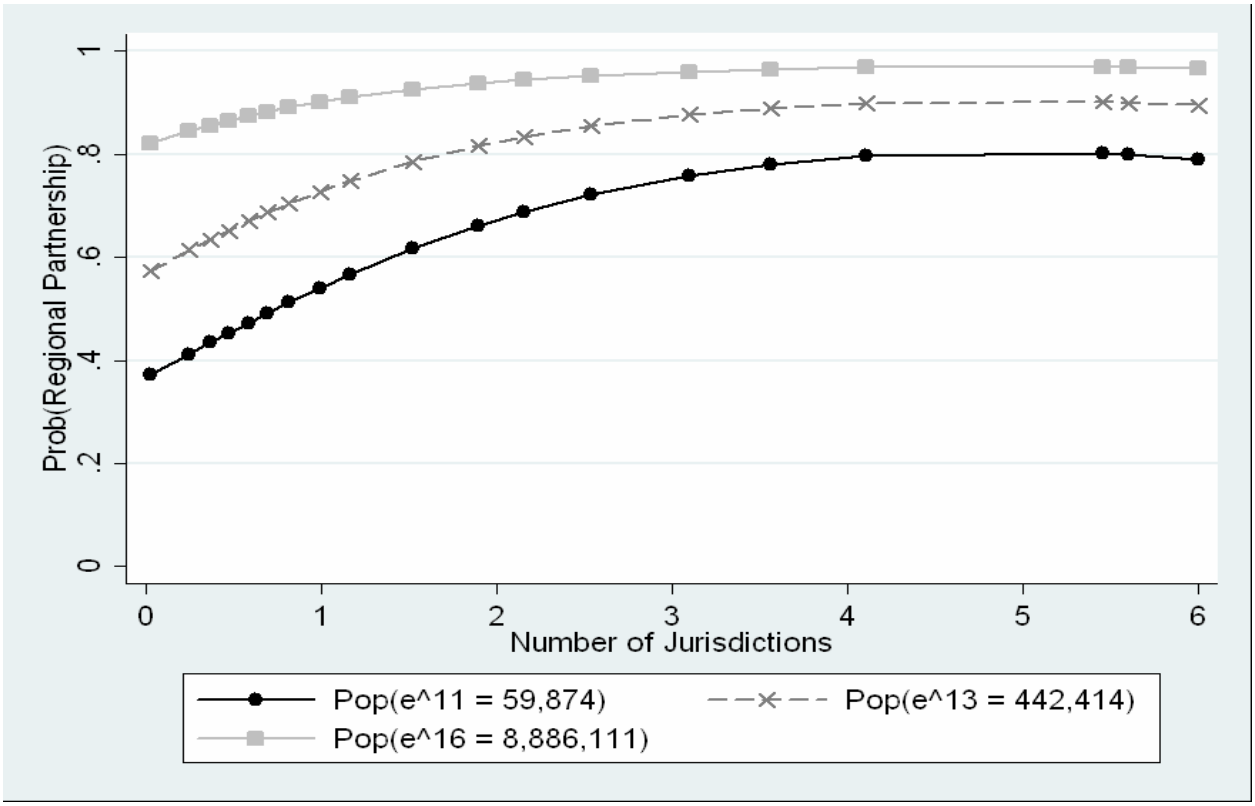


<Figure 6.5> Impact of Decision Concentration: represented by *NHHI*

One the other hand, the impact of group size on regional partnership formation is not confirmatory in this study. Throughout the models tested in the analysis, the number of jurisdictions and its squared term are not statistically significant (Models I, II, and III). It could be the case that the group size effect has a simple linear relationship with regional collaboration, yet the coefficient is not statistically significant in the linear model, while model fit, itself, is much better when a quadratic equation is employed in this analysis. Therefore, this analysis keeps exploring the non-linear relationship. Another notable issue-- that the simple number of jurisdictions may be a better measure for the concept of metropolitan fragmentation than the number of governments controlled for population--is also tested by trial-and-error, yet results show no significant difference in both cases.

One interesting finding, however, is that whereas group size effect shows a U-shape relationship with regional partnership formation in a simpler model (Model I), it has inverse U-shape when it is controlled for contextual, relational, and controlled factors (Models II and III). In other words, if the benefits and costs, contexts, and relational structures of collaboration are taken into account together, regional partnership formation is less likely to occur when there are either too few or too many participants are involved in potential collaboration. The results in

Figures 6.6 and 6.7 also demonstrate the non-linear relationship between regional partnership formation and the number of local jurisdictions. While controlling for both population size and the existence of an old form of regional approach (measuring the degree of closure), Figures 6.6 and 6.7 report the predicted probabilities of regional partnerships being formed as the number of jurisdictions grows.



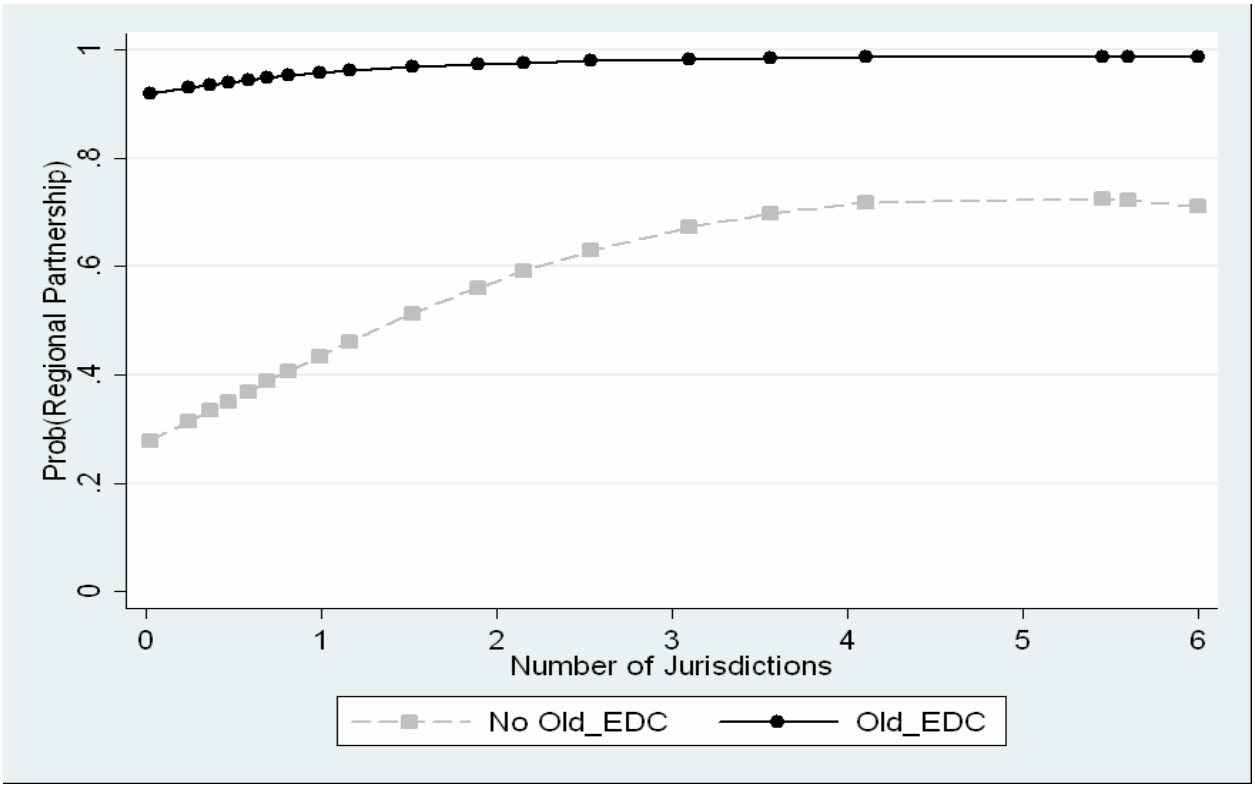
<Figure 6.6> Impact of Group Size I: represented by Number of Local Jurisdictions

Since Olson (1965), the group size effect has mostly been viewed as an impediment to successful collective action (Olberding 2002). However, Parks and Oakersons (1989) suggest that in many instances highly fragmented metropolitan areas have many horizontal and vertical arrangements or create hierarchically nested arrangements. According to the scenario of public choice theories, this is possible partly because having more jurisdictions increases the need for more differentiated public goods and services, especially when they are provided only through collaboration. This implies that the relationship between fragmentation and collaboration may not be simple as suggested by a single theory or approach. Rather, the level of collaboration is a

function of both potential benefits and transaction costs. As discussed in the previous section, the net benefits of collaboration are determined by both potential benefits from economies of scale and transaction costs for coordination. The greater the net benefits from collaboration, the more actors are assumed to be collaborative. Both figures also demonstrate that the impact of group size differs depending on the shape of benefit and cost curves. Especially, as Olson (1965) pointed out, fragmentation is less likely to lead to collaboration due to larger transaction costs involved, yet the opposite is possible if gains from collaboration outweigh the costs from conflicting interests.

In Figure 6.6, while metropolitan areas with larger populations are more likely to establish regional collaboration than their counterparts with smaller populations, the probabilities of regional partnership formation generally grows as the number of local jurisdictions becomes larger. However, the increasing rate of probabilities decreases and the probabilities fall back to the point where the number of local governments is 5 (more exactly, the first derivative gives us 5.5 as a turning point in this case). Since most cases in this variable have less than 5.5, it is extremely difficult to observe that the likelihood of regional partnership formation decreases in this study. Most importantly, the fact that the group size variable in the data set generally has a positive relationship with the likelihood of regional partnership formation in Models II and III suggests that the contextual and relational aspects of metropolitan areas could transform the game environments of the prisoners' dilemma into assurance game situations. In other words, Olson's (1965) original problems of group size effect impeding a successful collective action can be mitigated when not only various institutional arrangements but also the embedded network structures alter game environments endogenously and induce actors to collaborate with each other.

However, the results still suggest that too many participants in collective action situations cause the costs of coordinating activities to outweigh the benefits from economies of scale at some points. Figure 6.7 also shows that the predicted probabilities of regional partnerships being formed have a non-linear relationship with group size. When controlled for the existence of closure (an old type of regional approach) in the regions, the likelihood of regional partnership formation increase, yet, at a decreasing rate in this case.



<Figure 6.7> Impact of Group Size II: represented by Number of Local Jurisdictions

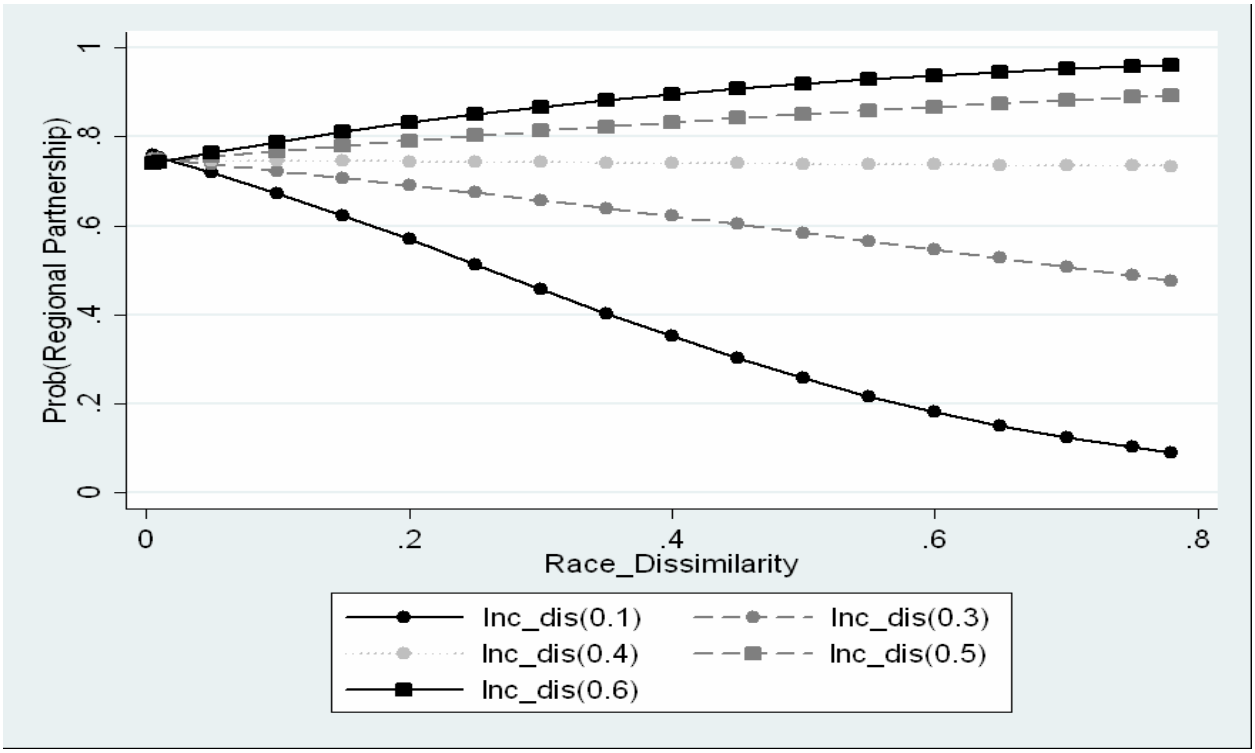
As discussed extensively in Figure 6.3, this non-linear relationship exists since the benefits from economies of scale are increasing, yet at a decreasing rate as the number of actors grows while the costs for coordinating activities are increasing exponentially. Having more and more actors in the group may bring several advantages: 1) It can achieve economies of scale so that it enables participants to engage in a large-scale of economic development projects. At the same time, 2) it also can absorb economies of scope by increasing the probability of reaching out to entrepreneurial actors who possess a broader set of possible option within, and perhaps beyond the group by redirecting useful resources and innovative information. 3) Finally, from the free-riders and outsiders stand point, the participating decision is costless if rules and agreements around collective action situations are already well-established so that they can decide to join easily without any of the additional costs involved in changing rules and agreements. However, these advantages mentioned above could be easily offset by the transaction costs of coordinating, negotiating, and monitoring when there are too many potential collaborators. As shown and implicitly argued in Figure 6.3, social network structures, both closure and brokerage, play an important role in reducing transaction costs so that they enable

the costs of collective actions to stay fairly low up to some level of group size; however, coordination difficulties grow exponentially after that point. Therefore, we can conclude that the group size effects suggested by Olson (1965) and other scholars (Ostrom 1990; Issac and Walker 1988) can be modified if we consider the potential impact of social network structures; in other words, the embedded social relations can transform the negative impact of group size into a positive one, which is more clearly confirmed by the comparison between group size coefficients in Model I and Model III. However, traditional arguments on group size effects still hold when there are too many potential participants.

Again, all the discussion implies that the success of regional partnership formation, especially regarding the group size effect, depends on the benefits and costs structure of collaboration, and these, in turn, are largely affected by contextual and relational factors around collaboration in metropolitan areas. None of the conjecture on group size effect in this analysis, however, is confirmatory and it needs to be more clearly understood in the follow-up study.

On the other hand, the results suggest that contextual factors, when they are factored out individually, generally do not explain well the dynamics underlying regional partnership formation. A state home rule that allows the legal basis for partnership creation to be negatively associated with regional collaboration activity, is not yet statistically significant. Economic demands measured by population change and unemployment rate are expected to affect regional partnership formation in Model III, but, this analysis finds no direct association with regional partnership formation in terms of statistical significance. Although shared lifestyle and interests among residents measured by percentage of commuters within a metropolitan area are expected to increase the likelihood of a regional partnership being formed, this factor is not statistically significant as well. However, the only results representing statistical significance in this category (contextual attributes) are variables that capture the degree of heterogeneity among local jurisdictions. According to the results, both race and median income dissimilarity variables decrease the chance of regional collaboration to be established (-0.059**, -0.263, respectively, in Model III). However, their interaction term has a positive sign with statistical significance (0.145*) in Model III. This suggests that the negative impact of demographic dissimilarity, especially race heterogeneity, is lessened when considered together with the negative impact of median income dissimilarity. Figure 6.8, reporting the change in predicted probabilities of regional partnership formation depending on the level of dissimilarity, demonstrates this

interacting effect more clearly. Figure 6.8 basically shows how predicted probabilities of regional partnership change when race dissimilarity increases by five different scenarios on median income dissimilarity. When actors are more homogeneous in terms of median income (e.g. income dissimilarity = 0.1 level), race dissimilarity is more negatively associated with regional partnership formation. However, the negative impact of race dissimilarity is mitigated when median income dissimilarity also becomes greater. One possible interpretation is that as the race dissimilarity in one metropolitan area is more associated with median income dissimilarity, the negative impact of race dissimilarity on regional partnership formation would be diminished. In general, the success of collaborative activity largely depends on how well conflicting interests among participants are addressed and this, in turn, is likely to reduce internal political and operational barriers from the local management perspective. Especially, race dissimilarity between central cities and their suburbs, with its interaction with income dissimilarity, provides a barrier to a regional approach to economic development possibly by increasing various types of transaction costs for collaboration.



<Figure 6.8> Impact of Race Dissimilarity: when interacted with median income dissimilarity

Although many control variables in this analysis have turned out to be statistically insignificant, the results of regional dummy variables pass the statistical test in both Model II and III implying that there exist some levels of variation in the attitude toward collaboration across the regions. As indicated in Table 6.7, I also calculated the predicted probabilities of each region when other variables are assumed to be at their mean values. In this logit analysis, the West region has been treated as a baseline group, and the coefficients of each regional group (South, Midwest, and Northeast) are -1.062*, -0.796, and -2.327***, respectively. More substantively, this means that the probabilities of a regional partnership being formed are highest in the West region (0.8514) and lowest in the Northeast region (0.3588), ceteris paribus, and the probability is higher by about 2.37 times in the West region than in the Northeast region (0.8514 vs. 0.3588).

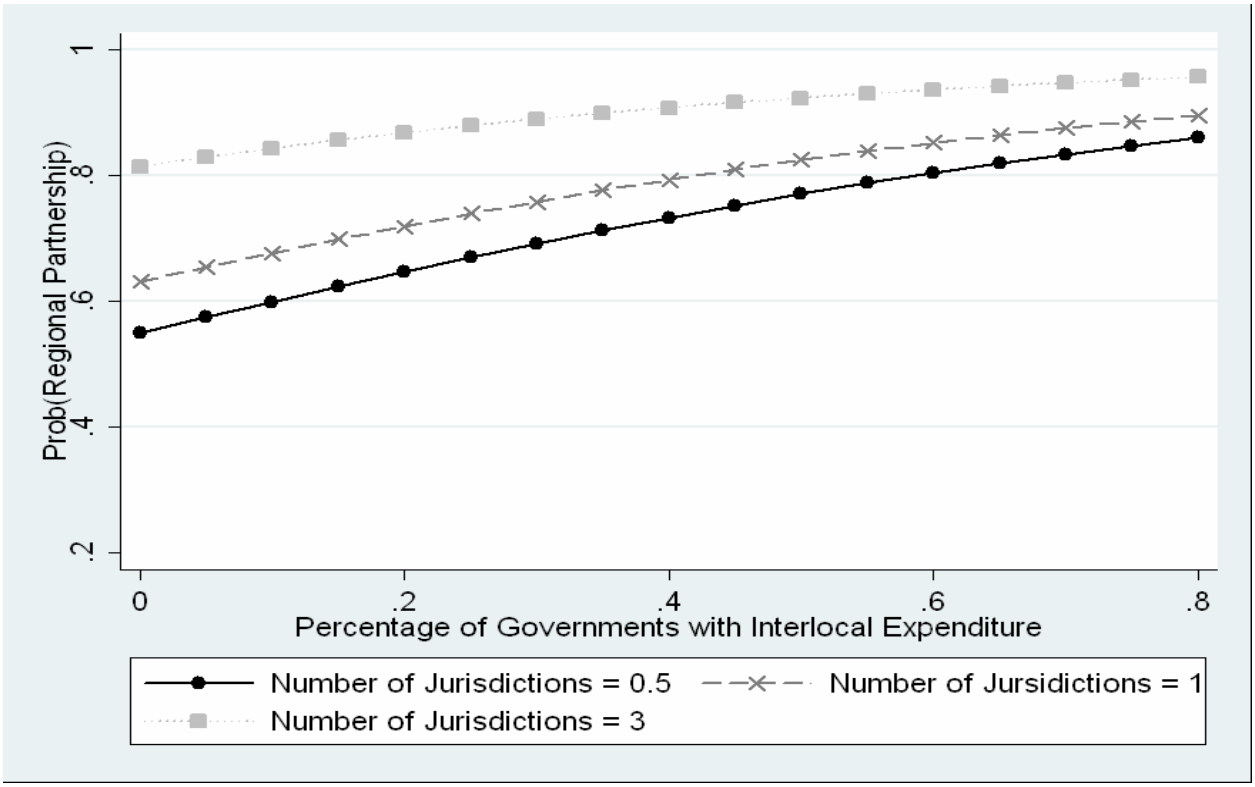
<Table 6.7> Probabilities of Regional Partnership by Regions

Region		Predicted Probability	95% Confidence Interval	
South	Pr(y=1|x)	0.6647	0.5190	0.8104
Midwest	Pr(y=1|x)	0.7212	0.5500	0.8924
Northeast	Pr(y=1|x)	0.3588	0.0930	0.6246
West	Pr(y=1|x)	0.8514	0.7185	0.9844

* Predicted probability of regional partnership formation when other variables are holding their means

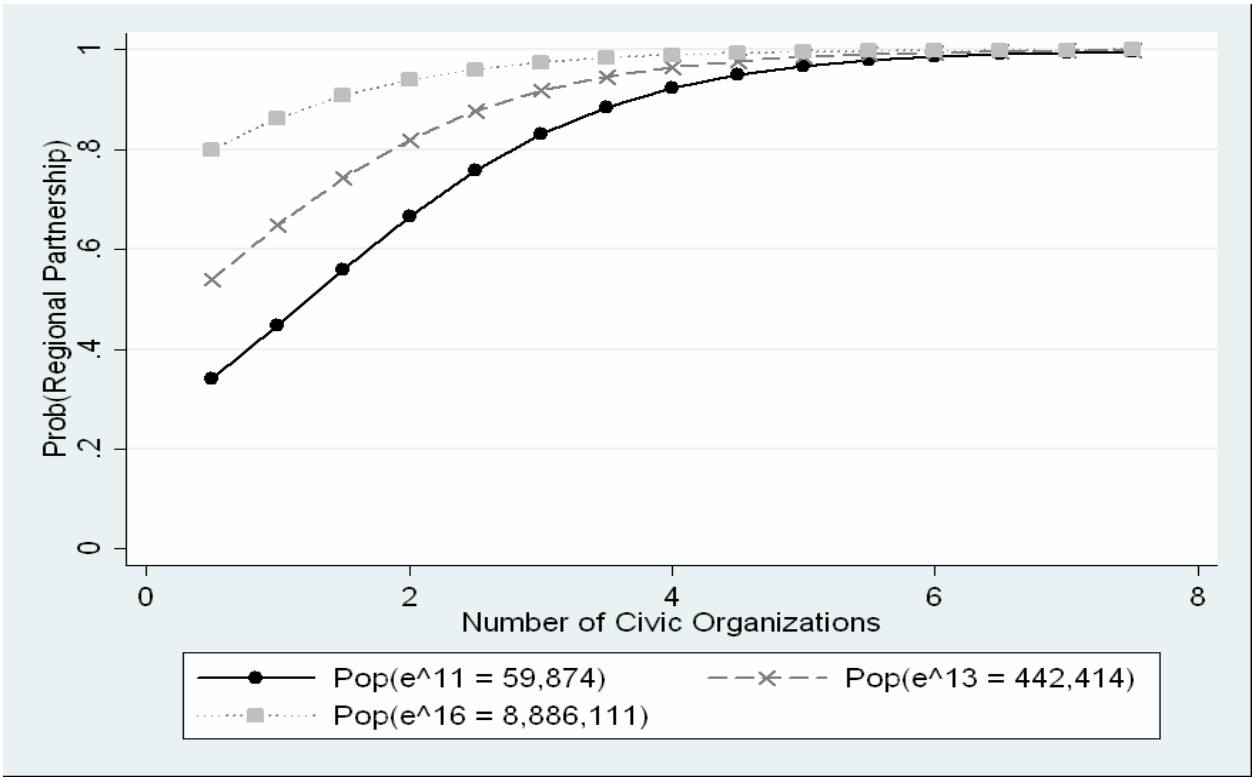
Finally, two aspects of the relational network factor are found to be influential on regional collaboration. With respect to a tightly-clustered network, the impacts of a regional development corporation and interlocal expenditure turn out to be statistically significant in Model III tested in this study. First, the previous experience of regional collaboration for economic development is expected to increase the level of collaboration at the current point in the related policy arenas (Thurmeier and Wood 2002; Olberding 2002). Repeated collaborative interaction enhances the chance that game players create trust and cooperative norms. And, once created, cooperative norms are critical for shifting from competitive to cooperative behavior. As revealed in Figure 6.7, the existence of old forms of economic development corporations significantly increases the chance that a regional partnership will be established regardless of the number of local jurisdictions within a metropolitan area. This strong impact of old economic

development corporations holds consistently across the effects of other variables. Second, regional collaborations are more likely to emerge when more and more local governments engage in spending on voluntary service agreements with one or more other local governments to resolve interdependencies faced in a service provision (Feiock and Shrestha 2007; Thurmeier and Wood 2002). As shown in Figure 6.9, the likelihood of a regional partnership being formed increases as the portion of local governments exercising interlocal fiscal cooperation (expenditure) with one or more other jurisdictions. This implies that the experience of collaboration in any particular policy area is more likely to increase the willingness to establish other collaborative activities with the same actors. In this regard, horizontal interactions among local jurisdictions, measured by the intensity of interlocal fiscal transfers, increases closure within metropolitan communities. Although interlocal service revenue is also included in the model, the result is not statistically significant. This might be the case because interlocal service revenue conveys more vague information about the fiscal flow among local governments. In other words, whereas interlocal service expenditure specifies fiscal flow by services, local jurisdictions, and accounts, interlocal service revenue does not have similar information in the data set.



<Figure 6.9> Impact of Interlocal Fiscal Cooperation (Tightly-clustered Network)

On the other hand, the number of civic non-profit organizations measuring brokerage is positively associated with regional partnership formation and is statistically significant. Other two variables also measuring brokerage-- the number of non-governmental development organizations and the number of non-profit professional organizations-- turn out not to be statistically significant. As shown in Figure 6.10, the probabilities of regional partnership being established grow as the number of civic organizations per capita increases. This positive relationship holds regardless of the population size in the metropolitan areas, even though the impact of non-profit civic organizations seems to be stronger in the areas with small populations. In other words, the increment in the number of non-profit civic organizations increases the probability of regional partnership formation more dramatically in metropolitan areas with small populations than areas with larger populations. Since regional partnerships are often formed and maintained with assistance of non-profit and profit organizations whose interests are promoting the economy of local jurisdictions and communities, access to their information and resources are critical to explore a broader set of possible gains by being connected to coordinators and unexploited partners. From the nested game perspective, non-profit organizations, especially civic organizations, serve as a public entrepreneur and help participants to choose among a wider set of alternatives by enlarging its strategy space, instead of confining themselves to a choice among given strategies. They redirect useful resources and information, which can coordinate each player's decision and its consequence. Intersectoral entrepreneurship may enhance the efficiency of collaborative efforts among local jurisdictions by providing leadership and management to ensure an achievement of common goals without the vagaries of constant attempts at mass movements (Aylward 2005). Therefore, the information-bridging role of non-governmental organizations allows local governments to maximize the advantage of innovation, which would not be possible without these entrepreneurial actors (Feiock 2007; Burt 2005).



<Figure 6.10> Impact of Non-profit Civic Organizations (Information-bridging Network)

CHAPTER 7
CONCLUSION

7.1 Summary of the Study

One of the main puzzles for scholars in the field of urban studies and public policy is how fragmented jurisdictional authorities in metropolitan areas create a self-organizing community to address intergovernmental problems such as economies of scale, negative externalities, urban sprawl, income inequality, environmental impact, and so on.

Local economic development policy is often described as a competitive environment in which local jurisdictions compete with each other for creating jobs and increasing the tax base. This implies that each jurisdiction's motivation to pursue its own well-being, with interaction of the competitive environments, prevents multiple jurisdictions from achieving desirable common goals, as a typical prisoners' dilemma suggests. However, interjurisdictional competition is only a part of the story and the prisoners' dilemma game describes merely one type of social situation where individual motivations conflict with socially desirable outcomes among many possible variations. In fact, what we observe in reality is that there has been considerable success in many alternative approaches to address regional problems through targeted collaborative efforts including intergovernmental agreements (Post 2002; Andrew 2006; Shrestha 2008), creation of special districts (McCabe 2000; 2004) and regional partnerships among local governments in a metropolitan area (Olberding 2002, Feiock, Steinacker, and Park 2009). This suggests that there could be numerous underlying mechanisms including institutional arrangements that make cooperation a more attractive strategy by lowering payoffs resulting from defection or increasing payoffs for cooperation, which ultimately leads local jurisdictions to play an assurance game. The purpose of this dissertation is to examine how and to what extent those mechanisms affect the emergence of self-organizing interlocal collaboration to address regional economic development by focusing on the nature of collective action, contextual aspects of regional problems, and the network relationships of local jurisdictions.

This study investigates both the Institutional Collective Action (ICA) framework and social network theory to understand how the nature of collective action, contextual aspects of regional problems, and the embedded network relationships of local jurisdictions help or deter

the creation of regional governance mechanisms. By focusing on regional partnerships for economic development in US metropolitan areas, this study examines the role of economic demand, transaction costs, and tightly-clustered and information-bridging network structures of metropolitan areas in building up multilateral voluntary regional organizations for economic development activities.

In order to provide a complete discussion about the underlying mechanisms of regional collaboration and achieve the potential inferential value from a closer integration of rigorous theorizing and empiricism, this study employs both analytic formal modeling and empirical statistical testing in its methodological approach in its two stages of research design: first, a formal model of regional partnership formation has been developed in Chapter 5 to investigate how the nature and composition of participants in collective situations affect the likelihood of partnership formation. Based purely on game theoretic motivation, a rational calculation of the benefits and costs of collaboration, this chapter examines the effect of group size, degree of decision fragmentation, and the benefits/costs structure on regional collaboration. The second stage has shed more light on deriving statistical inferences on how contextual and relational factors, along with the nature of collective action in the first stage, affect regional partnership formation.

The results suggest the evidence of distinctive roles of all three groups of variables identified in this dissertation: 1) the nature of collective action, 2) contextual aspects of regional problems, and 3) network relationships of local jurisdictions.

First, the nature of collective action demonstrates that the uncertainty around collective action comes from group size (the number of participants), the degree of decision fragmentation, and benefits/costs structure. Although the impact of group size and benefits/costs structure on regional collaboration remains less deterministic in this study, the degree of decision fragmentation shows a non-linear relationship (especially, a U-shape curve) with regional partnership formation. In other words, a voluntary regional development partnership is more likely to emerge in both cases 1) where there is a dominant local jurisdiction, and 2) when the decision making power of local governments is relatively equally diffused. This suggests that there is always a tension regarding the motivation of individual local jurisdictions; on the one hand, a local jurisdiction is well aware that the impact of its own decisions is relatively trivial to the overall outcomes so that they are more likely to address this uncertainty problem by counting

on the role of dominant or leading actors in overcoming collective action situations. On the other hand, despite the greater level of uncertainty, local jurisdictions always want to exercise a maximum level of autonomy and control in their economic development decisions. In addition, since every jurisdiction is eager to become a pivotal decision maker while pursuing common goals, a more fragmented system might serve better for their own interests as long as regional collaboration requires a small number of participants and addresses a soft type of policy coordination under relatively less uncertainty. Therefore, overall configurations of regional partnerships heavily depend upon the level of uncertainty and the extent to which local jurisdictions attempt to retain their local autonomy.

Although it is not statistically significant, the influence of group size (the number of participants) points out an interesting implication. Without the consideration of contextual and relational aspects of regional collaboration, group size is mostly negatively associated with regional partnership formation, as Olson (1965) originally argued. In other words, in the plain context of the public good provision game of regional collaboration, having more participants in the groups requires more time and effort to coordinate their conflicting interests, which leads to a low probability of regional partnership formation. However, the contexts of regional environments and the relational network structure of metropolitan areas somehow play an important role in mitigating collective action problems so that they allow more participants to enjoy the benefits of collaborative approaches. Especially, the large number of actors in the group may enable participants to1) engage in large-scale economic development projects by utilizing the economies of scale, 2) absorb economies of scope by increasing the probability of reaching out to entrepreneurial actors who possess a broader set of possible options within, and perhaps beyond, the group by redirecting useful resources and innovative information, and 3) even provide free-riders or outsiders with the legitimate opportunity to enjoy the same benefits of collaboration with a minimal level of contribution to collective actions. However, group size effect largely depends on the benefits/costs structure of collective action, and this, in turn, is generally affected by contextual and relational factors around collaboration in metropolitan areas.

Second, the results demonstrate that some of the contextual factors, especially transaction costs caused by community heterogeneity, deter regional partnerships from being formed. Although home rule provisions, demands for economic development (potential benefits from regional economic development), and shared life styles and interests are considered to stimulate

collaborative approaches, this study finds no direct association with regional partnership formation in terms of statistical significance. The only results representing statistical significance in this category are variables that capture the degree of heterogeneity among local jurisdictions. Especially, the results show that race dissimilarity, along with its positive interaction with income dissimilarity, is negatively associated with regional partnership formation. This suggests that 1) race dissimilarity generally decreases the chance of regional collaboration being established, and 2) race dissimilarity is more problematic when it is isolated than when it is combined with median income dissimilarity.

The results also show that there are some levels of variation in the attitude toward collaboration across the regions. In other words, the probabilities of regional partnerships being formed are relatively higher in the West and Midwest regions, yet relatively lower in the South and Northeast regions.

Third, two aspects of the relational network factor are found to be influential in increasing the likelihood of regional collaboration. The results demonstrate that both previous experience of regional collaboration for economic development and repeated interactions with each other over voluntary service agreements increase the adoption of metropolitan collaboration by providing the mechanisms that mitigate the credible commitment problems. This suggests that tightly-clustered network structures are more likely to enhance the willingness of a local jurisdiction to cooperate with others for regional economic development. On the other hand, the result also indicates that the probabilities of regional partnerships being established grow as the number of civic organizations per capita increases. Since regional partnerships are often formed and maintained with the assistance of non-profit and for-profit organizations whose interests are promoting the economy of local jurisdictions and communities, access to their information and resources is critical to explore a broader set of possible gains by being connected to coordinators and unexploited partners. The entrepreneurial role of non-profit organizations in regional economic development is to redirect useful resources and information, which can coordinate each player's decision and its consequence. Therefore, information-bridging network structures with possible interaction with non-governmental organizations allow local governments to maximize the advantage of innovation, which would not be possible without these entrepreneurial actors.

7.2 Implications of the Study

7.2.1 Theoretical Implications

This research contributes to the development of a theory of regional governance. This study views that both the theory of collective action (actor-based model) and regionalism approaches (institution-centered paradigm) are essential to better understand regional governance mechanisms.

While there has been investigation of many of institutional arrangements for regional governance, the studies have tended to focus on different aspects of the same features of institutional arrangements since they are based on different theoretical perspectives. However, in isolation, neither approach can provide a complete explanation of the emergence of regional collaboration in metropolitan areas. While this dissertation investigates how and to what extent uncertainty around collective action situations affects the decision of individual actors (local jurisdictions) by developing a formal model of Institutional Collective Action (ICA) in metropolitan governance, it acknowledges the importance of social contexts which construct the game environment by incorporating the social networks perspective.

This integrated approach is based on the perspective that players shape the structure of games, but structure also determines what players are expected to do. In other words, social structures are not only the medium but also the outcome of actions of human beings. In this sense, as Scharpf (2001) suggests, actor-theoretic or rational-choice and institutionalist or structural paradigms, which are conventionally treated as being mutually exclusive, should and can be integrated. In particular, the institutional factors of collective action including embedded social network structures often play an important role in explaining empirical variations around collective action problems. Social relations among game actors play an important role in changing payoff structures by reducing transaction costs and expanding the potential benefits from mutual collaboration. Therefore, one advantage of this integrated approach is that it provides a better explanation under what conditions a metropolitan area might successfully achieve the game transition from zero-sum to non-zero-sum situations.

In order to fully utilize the advantage of this integrated approach, this study employs various tools in its research design. This dissertation attempts to address both an actor-centered model and the institutionalism paradigm by developing both analytic formal modeling and empirical validation in its methodological approach. While the growing sophistication in theory

and method were proceeding all too often independently of one another, good research should bring deduction and induction, hypothesis generation and hypothesis testing, close together. In this sense, this dissertation seeks to achieve potential inferential value that might come from a closer integration of rigorous theorizing and empiricism.

7.2.2 Practical Implications

In addition to theoretical implications, this research has important implications for the practice of regional governance. Most of all, voluntary regional development partnership is more likely to emerge in both cases 1) where there is a local jurisdiction which has a better position to attract an additional member to build a minimal provision coalition, and 2) when the decision making power of local governments is relatively equally diffused. This implies that there is always a tension regarding the motivation of individual local jurisdictions; when there exists a great deal of uncertainty, a leading role of dominant actors may be critical since smaller jurisdictions have few alternatives other than seeking cooperation with central cities in providing public services due to economies of scale. Some empirical studies find that areas with dominant actors are more likely to have collaborative regional solutions than their metropolitan counterparts with more independent polycentric systems (Foster 1997). On the other hand, a more fragmented system might overcome a collective action situation by constructing policy coordination with a small number of participants under relatively less uncertainty so that even peripheral actors are able to address their own social problems while enjoying the benefits from regional collaboration.

Without consideration of the contexts of regional problems and network structures, a large number of local jurisdictions requires more time and efforts to coordinate their conflicting interests, which makes regional collaboration less feasible. However, having more participants in the regional collaboration is not necessarily disadvantageous since most local jurisdictions seek to 1) maximize economies of scale, 2) achieve economies of scope by being connected to a broader set of possible options, and 3) convert some of the free-riders and outsiders into easy-riders. Here, two seemingly contrasting roles of network structures among local jurisdictions are essential; tightly-clustered network structures are more likely to enhance the willingness of a local jurisdiction to cooperate with others for regional economic development by mitigating credible commitment problems. At the same time, information-bridging network structures

allow local governments to maximize the advantage of innovation by being connected to coordinators and unexploited partners.

7.3 Future Study

This dissertation also provides the foundation for a future study to examine the emergence and maintenance of regional collaboration in the area of economic development policy. It could be extended to formal modeling, empirical study, and study of some alternative regional governance mechanisms in several ways.

First, a basic formal model in the Chapter 5 could be more sophisticated by reflecting the role of network structures on regional collaboration more seriously. Although a model developed in this study demonstrates how and to what extent complexity and uncertainty around collective action situations affect both the decisions of participating local jurisdictions and the overall configurations of collaboration, it does not explicitly introduce the relational aspects of actors as its primary parameters. Instead, this research provides a brief sketch of how interdependence among actors may mitigate credible commitment problems and ensure that the participants play an assurance game. In this case, the mechanisms about the manner in which the interdependence of actors affects the distribution on threshold should be more highlighted.

Alternatively, a formal model could be modified by using more adaptive models such as a computational approach or an agent-based modeling. While we do not necessarily have to rely on strong theories, this makes it relatively easier to parameterize the impact of network relationships among actors. For instance, agent-based modeling could be used to simply examine the theory of homophily in regional partnership formation (Lee and Park 2007).

In addition, the impact of decision fragmentation and actor heterogeneity could be further explored in a laboratory experiment settings in the future. By controlling some variables on resource endowments, network positions and so on, this experiment could examine propositions and develop hypotheses in a more systematic way.

Second, this study provides the basis for the extension of its empirical study. Although this dissertation focuses mainly on the emergence of regional partnerships for economic development, how this regional governance mechanism is sustained and how this collaborative approach enhances the economy of metropolitan areas are important empirical questions. In order to investigate the maintenance and performance of regional partnerships for economic

development, a national level survey is currently being conducted by several colleagues at Florida State University. In this survey, local jurisdictions are asked to report the types of economic development activities that have been implemented through regional partnerships, the kinds of network structures that have been established in the area of economic development policy, and how successfully their regional partnerships promote the economic situation in those areas.

The second set of empirical studies will focus more on network structures in collective action situations. In this study, the role of network structures has been estimated only by using simple network proxies such as the ratio of governments utilizing interlocal fiscal transfers and the number of civic non-profit organizations. However, network structures and their roles could be better understood if future studies could more directly map out network relationships among local governments. In particular, how both tightly-clustered and information-bridging network structures mitigate collective action dilemmas and lead to collaborative solutions in the various policy arenas has been an increasingly important research question (Feiock and Scholz 2009; Andrew 2006; Scholz, Berardo, Kyle 2008; Shrestha and Feiock 2006). In this sense, an empirical project on network analysis will investigate network structures and their dynamics among local governments and even non-governmental development organizations. In addition, this set of empirical studies could focus on how the different incentives of the policy actors shape overall configurations of collaboration by differentiating the roles of elected and appointed officials in regional economic development (Feiock et al. 2009).

Finally, this study could further expand to research projects examining other multilateral alternatives for regional/metropolitan governance covering Regional Councils (RCs), Metropolitan Planning Organizations (MPOs), Councils of Governments (COGs), and local policy networks enhancing cooperation and coordination in fragmented metropolitan regional policy arenas, including economic development, land use, local service delivery and natural resources management.

APPENDIX FORMATION OF REGIONAL PARTNERSHIPS IN 1990-2007 BY METROPOLITAN AREAS

MSA	Regional Partnerships in 1990-2007
Abilene, TX MSA (Taylor)	1
Albany, GA MSA	1
Albany-Schenectady-Troy, NY MSA	1
Albuquerque, NM MSA	1
Alexandria, LA MSA (Rapides)	0
Allentown-Bethlehem-Easton, PA MSA	1
Altoona, PA MSA (Blair)	1
Amarillo, TX MSA	0
Anchorage, AK MSA (Anchorage)	0
Anniston, AL MSA (Calhoun)	0
Appleton-Oshkosh-Neenah, WI MSA	0
Asheville, NC MSA	1
Athens, GA MSA	0
Atlanta, GA MSA	1
Auburn--Opelika, AL MSA	0
Augusta-Aiken, GA-SC MSA	1
Austin-San Marcos, TX MSA	1
Bakersfield, CA MSA (Kern)	0
Bangor, ME NECMA (Penobscot)	1
Barnstable-Yarmouth, MA NECMA (Barnstable)	0
Baton Rouge, LA MSA	0
Beaumont-Port Arthur, TX MSA	1
Bellingham, WA MSA (Whatcom)	1
Benton Harbor, MI MSA (Berrien)	1
Billings, MT MSA (Yellowstone)	0
Biloxi-Gulfport-Pascagoula, MS MSA	1
Binghamton, NY MSA	1
Birmingham, AL MSA	1
Bismarck, ND MSA	1
Bloomington, IN MSA (Monroe)	0
Bloomington-Normal, IL MSA (McLean)	0
Boise City, ID MSA	1
Boston-Worcester-Lawrence-Lowell-Brockton, MA-NH NECMA	0
Brownsville-Harlingen-San Benito, TX MSA (Cameron)	0
Bryan-College Station, TX MSA (Brazos)	1
Buffalo-Niagara Falls, NY MSA	1
Burlington, VT NECMA	1
Canton-Massillon, OH MSA	0
Casper, WY MSA (Natrona)	1
Cedar Rapids, IA MSA (Linn)	1
Champaign-Urbana, IL MSA (Champaign)	1
Charleston, WV MSA	1
Charleston-North Charleston, SC MSA	1

MSA	Regional Partnerships in 1990-2007
Charlotte-Gastonia-Rock Hill, NC-SC MSA	1
Charlottesville, VA MSA	1
Chattanooga, TN-GA MSA	1
Cheyenne, WY MSA (Laramie)	0
Chicago-Gary-Kenosha, IL-IN-WI CMSA	1
Chico-Paradise, CA MSA (Butte)	1
Cincinnati-Hamilton, OH-KY-IN CMSA	1
Clarksville-Hopkinsville, TN-KY MSA	1
Cleveland-Akron, OH CMSA	1
Colorado Springs, CO MSA (El Paso)	1
Columbia, MO MSA (Boone)	1
Columbia, SC MSA	1
Columbus, GA-AL MSA	0
Columbus, OH MSA	0
Corpus Christi, TX MSA	0
Corvallis, OR MSA	1
Cumberland, MD-WV MSA	1
Dallas-Fort Worth, TX CMSA	1
Danville, VA MSA	0
Davenport-Moline-Rock Island, IA-IL MSA	1
Dayton-Springfield, OH MSA	1
Decatur, AL MSA	1
Decatur, IL MSA (Macon)	1
Daytona Beach, FL MSA	0
Denver-Boulder-Greeley, CO CMSA	1
Des Moines, IA MSA	0
Detroit-Ann Arbor-Flint, MI CMSA	1
Dothan, AL MSA	1
Dover, DE MSA (Kent)	0
Dubuque, IA MSA (Dubuque)	1
Duluth-Superior, MN-WI MSA	1
Eau Claire, WI MSA	1
Elkhart-Goshen, IN MSA (Elkhart)	1
Elmira, NY MSA (Chemung)	1
El Paso, TX MSA (El Paso)	0
Enid, OK MSA (Garfield)	0
Erie, PA MSA (Erie)	0
Eugene-Springfield, OR MSA (Lane)	1
Evansville-Henderson, IN-KY MSA	1
Fargo-Moorhead, ND-MN MSA	0
Fayetteville, NC MSA (Cumberland)	1
Fayetteville-Springdale-Rogers, AR MSA	0
Flagstaff, AZ-UT MSA	0
Florence, SC MSA (Florence)	0
Florence, AL MSA	1
Fort Collins-Loveland, CO MSA (Larimer)	0
Fort Myers-Cape Coral, FL MSA (Lee)	0
Fort Pierce-Port St. Lucie, FL MSA	0
Fort Smith, AR-OK MSA	0

MSA	Regional Partnerships in 1990-2007
Fort Walton Beach, FL MSA (Okaloosa)	0
Fort Wayne, IN MSA	1
Fresno, CA MSA	1
Gadsden, AL MSA (Etowah)	1
Gainesville, FL MSA (Alachua)	0
Glens Falls, NY MSA	0
Goldsboro, NC MSA (Wayne)	1
Grand Forks, ND-MN MSA	1
Grand Junction, CO MSA (Mesa)	1
Grand Rapids-Muskegon-Holland, MI MSA	1
Great Falls, MT MSA (Cascade)	0
Green Bay, WI MSA (Brown)	0
Greensboro--Winston-Salem--High Point, NC MSA	1
Greenville, NC MSA (Pitt)	1
Greenville-Spartanburg-Anderson, SC MSA	0
Harrisburg-Lebanon-Carlisle, PA MSA	1
Hartford, CT NECMA	1
Hattiesburg, MS MSA	1
Hickory-Morganton-Lenoir, NC MSA	1
Honolulu, HI MSA (Honolulu)	1
Houma, LA MSA	0
Houston-Galveston-Brazoria, TX CMSA	1
Huntington-Ashland, WV-KY-OH MSA	1
Huntsville, AL MSA	0
Indianapolis, IN MSA	1
Iowa City, IA MSA (Johnson)	1
Jackson, MI MSA (Jackson)	1
Jackson, MS MSA	1
Jackson, TN MSA	1
Jacksonville, FL MSA	0
Jacksonville, NC MSA (Onslow)	1
Jamestown, NY MSA (Chautauqua)	0
Janesville-Beloit, WI MSA (Rock)	1
Johnson City-Kingsport-Bristol, TN-VA MSA	1
Johnstown, PA MSA	1
Jonesboro, AR MSA (Craighead)	0
Joplin, MO MSA	1
Kalamazoo-Battle Creek, MI MSA	0
Kansas City, MO-KS MSA	1
Killeen-Temple, TX MSA	0
Knoxville, TN MSA	1
Kokomo, IN MSA	1
La Crosse, WI-MN MSA	1
Lafayette, IN MSA	1
Lafayette, LA MSA	0
Lake Charles, LA MSA (Calcasieu)	1
Lakeland-Winter Haven, FL MSA (Polk)	1
Lancaster, PA MSA (Lancaster)	0
Lansing-East Lansing, MI MSA	0

MSA	Regional Partnerships in 1990-2007
Laredo, TX MSA (Webb)	0
Las Cruces, NM MSA (Dona Ana)	1
Las Vegas, NV-AZ MSA	1
Lawrence, KS MSA (Douglas)	0
Lawton, OK MSA (Comanche)	0
Lewiston-Auburn, ME NECMA (Androscoggin)	1
Lexington, KY MSA	1
Lima, OH MSA	0
Lincoln, NE MSA (Lancaster)	0
Little Rock-North Little Rock, AR MSA	0
Longview-Marshall, TX MSA	0
Los Angeles-Riverside-Orange, CA CMSA	1
Louisville, KY-IN MSA	1
Lubbock, TX MSA (Lubbock)	0
Lynchburg, VA MSA	1
Macon, GA MSA	1
Madison, WI MSA (Dane)	0
Mansfield, OH MSA	0
McAllen-Edinburg-Mission, TX MSA (Hidalgo)	1
Medford-Ashland, OR MSA (Jackson)	1
Melbourne-Titusville-Palm Bay, FL MSA (Brevard)	1
Memphis, TN-AR-MS MSA	0
Merced, CA MSA (Merced)	0
Miami-Fort Lauderdale, FL CMSA	0
Milwaukee-Racine, WI CMSA	1
Minneapolis-St. Paul, MN-WI MSA	1
Missoula, MT MSA	0
Mobile, AL MSA	0
Modesto, CA MSA (Stanislaus)	1
Monroe, LA MSA (Ouachita)	0
Montgomery, AL MSA	0
Muncie, IN MSA (Delaware)	0
Myrtle Beach, SC MSA (Horry)	0
Naples, FL MSA (Collier)	0
Nashville, TN MSA	1
New Orleans, LA MSA	1
New York-Northern New Jersey-Long Island, NY-NJ-CT-PA CMSA/NECMA	1
New London-Norwich, CT NECMA (New London)	1
Norfolk-Virginia Beach-Newport News, VA-NC MSA	1
Ocala, FL MSA (Marion)	1
Odessa-Midland, TX MSA	0
Oklahoma City, OK MSA	0
Omaha, NE-IA MSA	0
Orlando, FL MSA	1
Owensboro, KY MSA (Daviess)	1
Panama City, FL MSA (Bay)	0
Parkersburg-Marietta, WV-OH MSA	0
Pensacola, FL MSA	1

MSA	Regional Partnerships in 1990-2007
Peoria-Pekin, IL MSA	1
Philadelphia-Wilmington-Atlantic City, PA-NJ-DE-MD CMSA	1
Phoenix-Mesa, AZ MSA	1
Pine Bluff, AR MSA (Jefferson)	0
Pittsburgh, PA MSA	1
Pittsfield, MA NECMA (Berkshire)	0
Pocatello, ID MSA (Bannock)	1
Portland, ME NECMA (Cumberland)	0
Portland-Salem, OR-WA CMSA	1
Providence-Warwick-Pawtucket, RI NECMA	1
Provo-Orem,UT MSA (Utah)	0
Pueblo, CO MSA (Pueblo)	0
Punta Gorda, FL MSA (Charlotte)	0
Raleigh-Durham-Chapel Hill, NC MSA	1
Rapid City, SD MSA (Pennington)	1
Reading, PA MSA (Berks)	1
Redding, CA MSA (Shasta)	0
Reno, NV MSA (Washoe)	1
Richland-Kennewick-Pasco, WA MSA	0
Richmond-Petersburg, VA MSA	1
Roanoke, VA MSA	1
Rochester, MN MSA (Olmsted)	1
Rochester, NY MSA	0
Rockford, IL MSA	1
Rocky Mount, NC MSA	0
Sacramento-Yolo, CA CMSA	1
Saginaw-Bay City-Midland, MI MSA	1
St. Cloud, MN MSA	1
St. Joseph, MO MSA	0
St. Louis, MO-IL MSA	1
Salinas, CA MSA (Monterey)	0
Salt Lake City-Ogden, UT MSA	0
San Angelo, TX MSA (Tom Green)	0
San Antonio, TX MSA	1
San Diego, CA MSA (San Diego)	1
San Francisco-Oakland-San Jose, CA CMSA	1
San Luis Obispo-Atascadero-Paso Robles, CA MSA (San Luis Obispo)	0
Santa Barbara-Santa Maria-Lompoc, CA MSA (Santa Barbara)	1
Santa Fe, NM MSA	1
Sarasota-Bradenton, FL MSA	0
Savannah, GA MSA	0
Scranton--Wilkes-Barre--Hazleton, PA MSA	0
Seattle-Tacoma-Bremerton, WA CMSA	1
Sheboygan, WI MSA (Sheboygan)	0
Sharon, PA MSA (Mercer)	1
Sherman-Denison, TX MSA (Grayson)	1
Shreveport-Bossier City, LA MSA	1
Sioux City, IA-NE MSA	1

MSA	Regional Partnerships in 1990-2007
Sioux Falls, SD MSA	1
South Bend, IN MSA (St. Joseph)	1
Spokane, WA MSA (Spokane)	1
Springfield, IL MSA	0
Springfield, MA NECMA	1
Springfield, MO MSA	0
State College, PA MSA (Centre)	0
Steubenville-Weirton, OH-WV MSA	1
Stockton-Lodi, CA MSA (San Joaquin)	1
Sumter, SC MSA (Sumter)	0
Syracuse, NY MSA	0
Tallahassee, FL MSA	1
Tampa-St. Petersburg-Clearwater, FL MSA	1
Terre Haute, IN MSA	0
Texarkana, TX-Texarkana, AR MSA	0
Toledo, OH MSA	1
Topeka, KS MSA (Shawnee)	0
Tucson, AZ MSA (Pima)	1
Tulsa, OK MSA	1
Tuscaloosa, AL MSA (Tuscaloosa)	0
Tyler, TX MSA (Smith)	0
Utica-Rome, NY MSA	0
Victoria, TX MSA (Victoria)	0
Visalia-Tulare-Porterville, CA MSA (Tulare)	0
Waco, TX MSA (McLennan)	0
Washington-Baltimore, DC-MD-VA-WV CMSA	1
Waterloo-Cedar Falls, IA MSA (Black Hawk)	1
Wausau, WI MSA (Marathon)	1
West Palm Beach-Boca Raton, FL MSA (Palm Beach)	0
Wheeling, WV-OH MSA	1
Wichita, KS MSA	0
Wichita Falls, TX MSA	0
Williamsport, PA MSA (Lycoming)	0
Wilmington, NC MSA	1
Yakima, WA MSA (Yakima)	0
York, PA MSA (York)	0
Youngstown-Warren, OH MSA	1
Yuba City, CA MSA	1
Yuma, AZ MSA (Yuma)	1

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BIOGRAPHICAL SKETCH

Education

Florida State University, **Tallahassee, FL**
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University of Virginia, **Charlottesville, VA**
M.A. in Economics, 2003
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Yonsei University**, Seoul, Republic of Korea**
B.A. in Economics, 2001

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Research Papers and Publications

Articles in Refereed Journals
Feiock, Richard C., **In Won Lee**, Hyung Jun Park and Keon Lee. 2009 "Policy Networks Among Local Elected Officials: Information, Commitment, and Risk Aversion," *Urban Affairs Review* 45 (2): forthcoming

Lee, In Won and Hyung Jun Park 2007 "Choosing Sides: Formation of Regional Partnership for Economic Development in Metropolitan Area and Landscape Theory of Aggregation" *International Review of Public Administration* 12(1): 63-79

Manuscript under Review or in Preparation
"Social Capital and Regional Partnerships: Overcoming the Transaction Costs of Institutional Collective Action" with Richard Feiock and Hyung Jun Park, revise and resubmit from *Journal of Public Administration Research and Theory.*

"Economic Development Collaboration and the Role of Elected and Appointed Officials" with Richard Feiock to be submitted for review, Fall 2008

Conference Papers

"Network Choices and Economic Performance in Local Economic Development" with Hyunsang Ha, presented at Annual Conference of Southeast Conference on Public Administration, Orlando, FL, Sep 2008

"Institutional Collective Action and Institutional Choices for Affordable Housing Provision" with Hyunsang Ha and Richard Feiock, presented at Annual Conference of Southeast Conference on Public Administration, Orlando, FL, Sep 2008

"Networks of Local Elected and Appointed Officials: The Structure of Economic Development Cooperation in Central Florida" with Feiock, Richard presented at Annual Conference of Midwest Political Science Association, Chicago, IL, Mar 2008

"Do Different Structures of Regional Organizations Matter in Interlocal Cooperation?: How the Network Structure of Local Governments Responds to the Different Types of Regional Governance Organizations?" with Sung Wook, Kwon presented at Annual Meeting of American Society of Public Administration, Dallas, TX, Mar 2008

"Networks of Local Elected and Appointed Officials: The Structure of Economic Development Cooperation in Central Florida" with Feiock, Richard presented at Annual Conference of International Sunbelt Social Network Association, St. Pete Beach, FL, Jan 2008

"Networks of Competition and Cooperation: The Structure of Economic Development Cooperation in Orlando Metropolitan Area" with Feiock, Richard presented at Annual Conference of Southern Political Science Association, New Orleans, LA, Jan 2008

"A Voting Game Approach on Regional Partnership Formation: Building Winning Coalition without Shared Beliefs" presented at Annual Meeting of American Society of Public Administration, Washington D.C., Mar 2007

"Duration of City Managers and Competing Risks Model: Binary TSCS Approach" presented at Annual Conference of Midwest Political Science Association, Chicago, IL, April 2006

"Transaction Cost Politics and Institutional Changes in Local Service Delivery," with Sung Wook, Kwon and Richard C. Feiock, presented at Annual Meeting of Association for Public Policy Analysis and Management, Washington D.C., November 2005

"Choosing Sides: Landscape Theory of Formation of Regional Partnership for Economics Development in Metropolitan Areas" presented at Annual Conference of Midwest Political Science Association, Chicago, IL, April 2005

Teaching Experience

Florida State University, **Tallahassee, FL**
Graduate Instructor, Askew School of Public Administration and Policy

- PAD 3003 Public Administration in Society, Summer 2007

Teaching Assistant, Askew School of Public Administration and Policy

- PAD 5701 Quantitative Analysis (MPA Core Course), Spring and Summer2008
- PAD 5935 Health Care Finance, Spring 2008

Invited Lectures and Presentations

Workshop on Networks and Collaboration in Local Government (organized by Frederickson, George and Feiock, Richard), University of Kansas, November 2008

SIENA Workshop: Social Network Theory and Method, PAD 6721 Policy Analysis Research (Professor Feiock), Florida State University, March 2007 and 2008

Public Administration Research Colloquium, Florida State University, February 2008

Research Experience

Research Assistant, DeVoe L. Moore Center, Florida State University, **Tallahassee, FL, September 2006-July 2007**

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Awards and Recognitions

Samsung Foundation Research Grant on Governance, SungKunKwan University, **Seoul, Korea, Aug 2008-June 2009 ($10,000)**
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In Won Lee was born and grown up in Seoul, Korea. He earned his a B.A. in Economics from Yonsei University, Korea in 2001; and a M.A. in Economics from University of Virginia in 2003. In 2008, he successfully defended his dissertation in the Askew School of Public Administration and Policy at Florida State University. He starts his post-doctoral research project for Lincoln Institute of Land Policy at Florida State University in 2009. His research and teaching interests are urban politics and policy, community and economic development, collaborative governance, intersectoral and interorganizational management, public policy/policy process, collaborative game theory, and social network analysis.