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Conference Paper

The Effects of Interlocal Collaboration on Local Economic Performance: Investigation of Korean Cases

55th Congress of the European Regional Science Association: "World Renaissance: Changing roles for people and places", 25-28 August 2015, Lisbon, Portugal

Provided in Cooperation with:

European Regional Science Association (ERSA)

Suggested Citation: Im, Eunok (2015) : The Effects of Interlocal Collaboration on Local Economic Performance: Investigation of Korean Cases, 55th Congress of the European Regional Science Association: "World Renaissance: Changing roles for people and places", 25-28 August 2015, Lisbon, Portugal

This Version is available at:

<http://hdl.handle.net/10419/124804>

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**The Effects of Interlocal Collaboration on Local Economic Performance:
Investigation of Korean Cases**

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March 2, 2014

Abstract

Collaboration among regional/local governments becomes more important for successful local economic development. It has emerged as an alternative to traditional competition-based strategies for local economic development. This study explores the degree of collaboration among local governments in the partnership and its impacts on local economic performance, using nation-wide survey results of 112 local government partnerships for economic development in Korea. Factor analysis identifies three key factors for the degree of interlocal collaboration: (1) commitment to mutual relationships and goals, (2) the quality of communication to build consensus among participants, and (3) the effectiveness of formal joint meetings, as a sub-dimension of communication. The multivariate regressions of three factors on contextual attributes (resource dependence on partners and geographical proximity), relational attributes (social/political similarity, perceived competitive relation, and trust in partners), and institutional attribute (the level of institutionalization) report interesting findings. Trust in partners and the level of institutionalization for the partnership turn out to be the most important factors affecting the level of commitment and the quality of communication in collaboration processes. On the other hand, resource dependence on partners and geographical proximity positively affect only formal joint meeting operation. Using the Baron and Kenny's three-step hierarchical regression analysis, this study finds that the degree of collaboration mediates the relationship between resource dependence, trust, and the level of institutionalization and local governments' strategic performance. However, it does not show any associations with direct economic performance measures—i.e., effectiveness and efficiency of a collaborative project that might be more influenced by, and thus hardly disentangled from, other various external economic/political factors. It implies that although a high quality collaboration process cannot guarantee the success of project itself, it entails participants' learning (i.e., accumulation of knowledge and experience) that may contribute to innovation and better economic performance in subsequent collaborative projects.

1. Introduction

Interlocal collaboration, both in decision-making and implementation, is widely adopted to deal with local fragmentation problems. Local governments increasingly face policy problems beyond jurisdictional boundaries (Frederickson, 1999; K. LeRoux, P. W. Brandenburger, & S. K. Pandey, 2010) such as common-pool resource management, externalities, and economies of scale (Steinacker, 2010). In the more integrated global economy than ever, interlocal collaboration has emerged as a more effective alternative to competition-based economic development strategies (Gordon, 2007; Wolfson & Frisken, 2000). Traditionally, the local economic development has been conceived as a competitive process in nature because local governments often compete each other to attract business and investment and to receive some assistance from state and federal (or central) government (Gordon, 2007; I. W. Lee, Feiock, & Lee, 2012). However, the competition approach has been criticized for the problems of inefficiency, negative externalities, inequity and less attention to regional competitiveness (Cleave & Arku, 2014). Olberding (Olberding, 2009) maintains that an interlocal collaborative decision-making strategy (e.g., regional partnership) for economic development has a greater potential to produce an optimal outcome as it can account for the benefits and costs of a decision to other local actors. The advocates of “new regional administration,” pursuing integration into a fewer number of local governments, argue that local governments can take advantage of synergistic benefits when they recognize their interdependence and promote cooperation amongst themselves (Olberding, 2002).

The collaborative approach has been well accepted in the practice. Indeed, many local governments in the United States (U.S.) have founded diverse forms of collaborative development strategies for their regional economic development (I. W. Lee et al., 2012;

Olberding, 2009). As is the trend in other countries, the demand for more interlocal collaboration for economic development has increased in Korea as well (Jung, 2009; KALGS, 2008). In particular, since the introduction of local autonomy in 1995, the problem of inefficient regional/local development has been exacerbated due to vigorous competition among local governments (M. H. Kang, 2009) and incomplete devolution (K.-h. Kim, 2008; Y.-W. Kim, 2011); as a result, there has been a growing need for interlocal collaboration in Korea.

Responding to this trend toward collaboration in the practice, over the past decade there has been a good body of research on interlocal collaborative mechanism in the field of public management and urban development (e.g., Agranoff & McGuire, 1998; Brown & Potoski, 2003; Feiock & Scholz, 2010; Frederickson, 1999; Krueger & McGuire, 2005; Kelly LeRoux, Paul W. Brandenburger, & Sanjay K. Pandey, 2010; Thurmaier & Wood, 2002). However, despite the increased importance of interlocal collaboration, relatively little attention has been paid to the degree of collaboration among participants and its outcomes. Some studies on interlocal collaboration for economic development (e.g., Agranoff & McGuire, 1998; Andersen & Pierre, 2010; Feiock, Steinacker, & Park, 2009; I. W. Lee et al., 2012) speak to the question about what factors make local governments opt to collaborate for economic development (i.e., whether to collaborate or not). However, they do not address what affects the degree of collaboration among participants in collaborative decision-making and implementation and how the degree of collaboration affects economic development performance. Furthermore, prior literature on interlocal collaboration for economic development has been developed primarily through case studies focusing on a few partnerships, perhaps due to lack of extensive, nation-wide datasets. Particularly, a great majority of studies on intergovernmental or interlocal collaboration for economic development in Korea have dealt with a specific case (e.g., Bang, 2011; Han, 2006; Y.

Kang, 2004; Oh & Kim, 2008). While the case studies focusing on the observation of a few partnerships allow researchers to investigate in more details, they cannot generalize the results to the wider population. To fill this void, this study uses a nation-wide dataset of interlocal collaboration for economic development in Korea. From the data, it attempts to identify major factors affecting the collaborative process among participants and outcomes and draw the generalized conclusion regarding what makes interlocal economic partnerships work well.

Specifically, this study addresses the following sets of research questions. First, *what are the facilitators of collaboration in interlocal partnerships for economic development?* According to Krueger and McGuire (2005), different incentives faced by each local government explain why certain local governments collaborate better than others. In particular, this research considers three dimensions affecting the degree of collaboration among actors in the collaborative process: (1) contextual attributes that are given to potential local collaborators in terms of the demand for resources and the population they serve, (2) relational attributes of individual local officials engaged in interlocal economic development projects, and (3) institutional attributes of the legal devices that are devised for a partnership operation. This study attempts to explain the relationships between these attributes and the degree or intensity of collaboration, primarily through the theoretical lenses of resource dependency theory, collective action theory, and transaction costs theory.

Second, *does a greater degree of collaboration among actors in partnerships produce better performance of economic development?* What elements of collaboration are more crucial to economic performance? Prior research in collaboration or network approaches illustrates the outcomes of better or intense collaboration. For instance, Capello (2000) shows the positive relationship between the degree of connectivity to a network in a city and urban performance. In

particular, she finds that more serious participation in a city network and more intense use of the network with cooperative behavior lead to greater urban performance in terms of successful urban policies implemented through sharing know-how on a growth strategy from the network. However, the evidence of the positive impact of collaboration on a successful collaborative outcome does not provide a holistic view for the complete chain of relationships among the collaboration facilitators, the degree of collaboration and collaboration outcome. There is scant empirical evidence of the relationships among them. To fill the void, this research examines whether the degree of collaboration, as a mediator, is affected by collaboration facilitation factors and then has any effects on performance. Specifically, it employs Baron and Kenny's approach (1986), which examines the mediating effects on the relationship between independent variables and dependent variables.

To that end, this study begins with the rationale for interlocal collaboration for economic development in Korea. Next, it sets out testable hypotheses regarding the relationships among three sets of attributes (antecedents), the degree of collaboration (mediator), and economic performance (outcomes). Then, it provides the details of the research methods including survey procedure, sample and measures. Lastly, it presents the results of empirical analyses, and concludes with a discussion of the findings and their implications for future research.

2. Local Government Collaboration for Economic Development in Korea

Interlocal collaboration is often considered as a plausible solution to problems created by local government fragmentation: diseconomies of scale, negative externalities, and common pool resource problems (Steinacker, 2010). In particular, for regional/local economic development, interlocal collaboration is necessary to maximize economies of scale and obtain the synergistic benefits of interdependence. Regional partnerships have the potential to achieve a more optimal

outcome that is greater than a sum of each local individual outcomes (Olberding, 2009).

Furthermore, in an era of fast technological change, a network among territorial partners allows them to acquire locally unavailable know-how and to enhance local innovation capacities (Capello, 2000). These advantages provide the general rationale for local collaboration. In particular, Korea is in greater need of an interlocal collaboration strategy for economic development for the following reasons.

First, since the introduction of local autonomy in 1995, the competitiveness of regional economic development in Korea rather has been challenged as conflicts among local governments increase. The demand for grass roots democracy has increased among Koreans since the first civilian president after the military coup of 1961 was elected in 1992, and accordingly decentralization and devolution initiatives have been suggested as an integral part of local autonomy. However, since the election for governors, mayors, and county executives in 1995, conflicts among local governments have been amplified because local autonomy inevitably generated a horizontal, competitive structure among local governments who seek to maximize their authorities and profits as an economic agent (M. H. Kang, 2009). According to Korea Public Administration DB Center (2006), a total of 88 interlocal conflict cases—NIMBY (short for “Not-in-My-Backyard”) (15), PIMBY (for “Please-in-My-Backyard”) (15), jurisdiction dispute (22) and authority dispute (25)—were reported for the first eight years of local autonomy (i.e., between 1995 and 2003). In particular, these conflicts likely emerge and intensify while small local autonomous governments compete for a same development project, pursuing their own interests with the greater cause for socially optimal outcomes ignored. Therefore, in the era of local autonomy, local government collaboration strategy in Korea is more needed to overcome

conflicts among fragmented local government and enhance regional competitiveness through economies of scale.

Second, even though 244 local governments have obtained their own authorities to make policies, lack of experiences, knowledge, and institutions for effective local economic developments led to low economic performance. With the inauguration of the Lee Myung-Bak administration in 2008, the government established the principle of interregional/interlocal cooperation as a new vehicle for regional development policies. It aims to enhance local/regional competitiveness through effective self-reliant localization policies, emphasizing the roles of the central government only as a coordinator rather than an implementer or controller (Choe, 2011). However, Korea is still developing the practice of local autonomy, and individual local governments lack the capability to implement comprehensive economic development (K.-h. Kim, 2008; Y.-W. Kim, 2011). Despite the considerable progress in devolving authority to local governments, the central government still owns substantial authorities over local finance and taxation and local government's organization (S.-C. Lee, 2006), which are critical to implement local economic development projects. For example, the central government remains to be the principal decision-maker in designating special economic zones, transferring development rights to private sectors, and laying out the requirement of investor in regional development. Given the situation, interlocal collaboration becomes more important for local governments with limited resources, institutions, or innovation capacities. Collaboration among them may contribute to greater competitiveness of participating local governments, by sharing their individual experience and know-how related to successful project management and technology innovation.

3. Theoretical Review and Hypotheses Development

3.1. Factors Influencing the Degree of Local Government Collaboration

This section identifies major factors affecting the degree of collaboration among local governments in collaboration processes, based on the following literature. First, it is rooted in the overarching framework of collaborative governance that include antecedents, collaborative processes, and outcomes (e.g., Ansell & Gash, 2008; Innes & Booher, 1999; Thomson & Perry, 2006; Wood & Gray, 1991). The review of the prior literature on a theoretical framework for successful collaborative governance identifies common factors that can be applicable to the case of interlocal partnerships for economic development. Second, it identifies potential factors that may affect the degree of collaboration in the context of interlocal development partnerships through reviewing the prior literature on regional development partnerships (e.g., Feiock et al., 2009; Krueger & McGuire, 2005; Olberding, 2002, 2009), which suggests the importance of local contexts for partnership formation or effectiveness. They can be largely classified into three broader types of factors: (a) physical/contextual attributes including resource dependence on partners and geographical proximity; (b) relational attributes among participants including social/political homophily among local agencies, perceived competition with partners, and trust in partners; and (c) an institutional attribute regarding the level of institutionalization for a partnership.

3.1.1. Physical/Contextual Attributes

Resource Dependence

According to resource dependency theory, the interlocal activities emerge when individual local governments have needs for resources from others to achieve their interests (Cook, 1977; Van de Ven, 1976). For example, when a local government suffers from insufficient resources—in terms of the kind or the amount—to implement public services or economic development projects independently, a likely solution to the problem is to seek other local governments that

are in a similar situation and, more importantly, have common interests, and are willing to share the costs and benefits (Krueger & McGuire, 2005). Collaboration may arise on a relative resource dependence basis even without lack of resources. In particular, local governments may be willing to collaborate with the partner to a greater degree when they place a huge value on the potential partner's resources, such as financial or human resources and managerial capacity, in terms of the expected contribution of the partners' resources to their own local economic development (Kwon & Lee, 2010). To summarize, as a local government is more dependent on other governments' resources either (a) due to the lack of necessary resources or (b) due to greater usefulness or attractiveness of others' resources, it will pursue a higher degree of collaboration with partners. This leads to H1a:

***H1a:** The degree of collaboration is positively associated with resource dependence on partner*

Geographical Proximity: Similarity in Population

Conceivably, neighboring local governments may well have much in common in geo-political and geo-economic characteristics.¹ Among others, they serve population of similar characteristics. They may serve even the same population when there are high traffic of commutes, for work, school, and even for shopping, between adjacent communities. The similar characteristics shared among the population and the frequent interactions and movements of the population builds highly inter-connected social relationships. Even from economic standpoint, neighboring towns likely share major products, local specialties, and industries, which enforces the importance of the inter-connectedness and the common needs of the population served by the

¹ Similarities in terms of economic, social, and political characteristics among local government officials will be discussed as part of social/political homophily in the following section.

neighboring towns. In sum, the similarities in characteristics of the population increases a demand for partnerships as a means to serve the common population more effectively and efficiently. In this regard, the physical proximity may affect behaviors in collaboration with neighboring local governments. Based on the information cost approach, Feiock, Steinacker and Park (2009) argue that proximity allows neighboring cities to be more knowledgeable of each other and to establish trust among themselves and therefore makes reputation more important. In other words, since neighboring cities had more interaction opportunities or experiences in the past, dealing with policy and administration issue together, they can reduce the information costs associated with collaboration and thus increase the efficiency of collaborative efforts. It leads to H1b:

***H1b:** The degree of collaboration is positively associated with the physical proximity between local governments.*

3.1.2. Relational Attributes

Social/Political Similarity of Local Government Officials

The homophily principle—“similarity breeds connection”—structures network ties of every type (McPherson, Smith-Lovin, & Cook, 2001:415). It supports the argument that people tend to be connected to others who are like themselves, with respect to socio-demographic and behavioral characteristics. For example, people tend to make social connections with others of the same age, ethnicity, education, social class and/or religion. ‘Social influence’ coming from similarity (Fiss, 2006) has the impact of the strength of connection, for instance, by reducing information costs. Following the argument about the effects of social homophily, this study contends that local governments with greater similarity in, for example, political opinion and demographics such as hometown, school ties, job background and college major of their

employees may collaborate to a greater degree than the other types. Among others, prior literature has paid attention to the effects of political homophily, a tendency to form connections with others who are politically similar (Gerber, Henry, & Lubell, 2013). In a similar vein, Feiock, Steinacker and Park (2009) argue that heterogeneity of participants in economic and demographic characteristics (including political strengths) makes allocation of aggregate gains more difficult and accordingly increases the likelihood of political opposition, if any, to cooperative solutions. In Korea it has been recognized that homogeneity in political opinions among participating local governments is an important determinant of whether to collaborate or not as well as the intensity of collaborative relationship. Although there is little research on the direct relationship between similarity of political opinions and collaboration among regions in Korea, inter-regional hostilities occurring based on political/ideological positions have been blamed for undermining the minimum consensus necessary for administrative functions (M.-C. Kim & Park, 1991). Therefore:

***H1c:** The degree of collaboration is positively associated with the social/political similarity of local officials.*

Perceived Competition

The perception of other local governments, or how other local governments perceive the qualities of a government, affect interaction between them (Gordon, 2007). Among many qualities, the following hypothesis pertains to the type of relationship in pursuing local governments' goals: a competitor or a cooperator. So to speak, whether to view them as competitors or as cooperators may influence the collaborative behaviors. Olberding (2002: 481) classifies intralocal relations into two types: interjurisdictional competition and regionalism. The interjurisdictional competition model, consistent with Tiebout's (1956) description, focuses on the competitive nature of interlocal relationships for economic development. The model

illustrates the competition among cities to attract residents and businesses through which efficient public goods provision can be achieved. However, competition is a double-edged sword. On the one hand, as discussed, competition helps to produce the optimal level of public services that maximizes benefits provided to residents and businesses at the lowest costs (the lowest overall tax rate) (Tiebout, 1956). On the other hand, an intense competition does more harm than good, impeding collaboration among cities. Kreuger and McGuire (2005) provide two reasons why local governments in a competitive relationship are reluctant to be engaged in collaboration: (a) concerns about unequal distribution of benefits from collaboration, and (b) probable opportunistic behaviors of collaborator. They argue that collaboration of competing agencies rarely produces equal gains and thus provides incentives for local governments to act opportunistically—to get more relative gains. In particular, despite likely absolute gains, competitors may not opt to collaborate because, in a competition, unequal benefits (i.e., non-zero relative gains) may create differential competitiveness (i.e., the loss of competitive balance).

In contrast, the regionalism model suggests a different perspective that stresses the positive functions of social and economic ties among local governments. From this perspective, when local governments recognize their interdependence, again due to their inter-connectedness, they tend to act in a cooperative manner which results in more desirable outcomes including economy-of-scale benefits (Olberding 2002). Under the circumstances, transaction costs associated with monitoring partners' opportunistic behavior are likely low. Therefore, local governments, even in competition, may choose to collaborate and further exert efforts to an extent during collaboration. However, concerned about unequal gains from collaboration, local governments in competition may make less commitment to collaboration than those in cooperative and, thus, less competitive relationships. In sum, this is a reason to believe that more

intense competition decreases local governments' commitment to collaboration. The following hypothesis is derived from this logic:

H1d: The degree of collaboration is negatively (positively) associated with the perceived competition (cooperation).

Trust in Partners

Social capital, as “an asset that accumulates as a result of trust and mutual favors,” (Kelly LeRoux et al., 2010:270) plays a critical role in inducing more collaborative interactions among partners (P. J. Robertson, 2006). As in the definition of social capital, trust constitutes an important dimension of social capital² (Maurer, Bartsch, & Ebers, 2011) and is often considered as a critical relationship-based capital of a collaborative partnership that, thus, has an indirect impact on the partnership's performance (Sarkar, Echambadi, Cavusgil, & Aulakh, 2001).³ More importantly, social network theorists believe that trust, professional disciplines, and norms of reciprocity which are embedded in human relations can aid to reduce transaction costs involving collective actions (Jones, Hesterly, & Borgatti, 1997; Kelly LeRoux et al., 2010; Thurmaier & Wood, 2002).

Trust affects a collaborative process in two ways. On the one hand, trust among collaborators reduces barriers of collaboration such as complexity and transaction costs (Ostrom, 1998; Thomson & Perry, 2006). Therefore, lower transaction costs associated with collaboration improves the efficiency of collaboration and in turn facilitate collaboration. On the other hand, it should be noted that trust and collaboration are in reciprocal relationships. The more and better collaborations can help to build trust which, in turn, facilitates more faithful collaboration.

² It is defined as “the sum of the actual and potential resources embedded within and derived from the network of relationships possessed by an individual or social unit” (Nahapiet and Ghoshal 1998:243); that is, social capital can be created through social network.

³ Sarkar et al. (2000) use the term, alliance, instead of partnership.

Ostrom (1998) suggests reciprocity, trust, and reputation as three key core factors leading to a collective action. Consistently, Ring and Van de Ven (1994) describe the development of reciprocity-based interaction among collaborative partners, through reputation building, and finally to trust-based collaboration. Underscoring the intensity of the implicit relationship, they even liken the trust-based relationship to ‘institutionalized psychological contracts’ (Ring & Van de Ven, 1994). In sum, the discussion boils down to the importance of trust in developing a high quality collaboration and leads to the following the hypothesis:

***H1e:** The degree of collaboration is positively associated with the level of trust in partners.*

3.1.3. Institutional Attribute

The Level of Institutionalization

Institutional arrangements shorten (or even remove) the processes unnecessary for productive negotiation and bargaining, set the allocation rules for incidences and responsibilities, and regulate the enforcement of the agreed-upon rules. Thereby, institutional arrangements enable collaboration to work well for collectively beneficial outcomes (Steinacker, 2004). Rules define means to cope with collective action problems participants seeking to collaborate encounter. In this sense, the level of institutionalization of institutional arrangement will be a crucial factor affecting the degree of collaboration among participants.

The level of institutionalization can be figured out through whether rules regarding the collaborative decision-making process, implementation and monitoring are specific and stable. For example, operational rules, which define “who can participate, what the participants may, must, or must not do, and how they will be rewarded or punished” (Tang, 1991:43), can be tools of allocating resources and managing collaboration in a predictable and efficient manner.

Specifying rules in advance, for example, regarding decision authorities and constraints, roles and responsibilities, the access of necessary information, the distribution of costs and benefits can reduce conflicts and practically govern the collaboration processes for joint decision-making (Ostrom, 1990; Thomson & Perry, 2006; Thomson, Perry, & Miller, 2009). Whether and how clearly these rules are constructed can affect cooperative actions among participants; in other words, well-constructed rules will facilitate cooperative actions among participants, resolving collective action problems.

Furthermore, the degree of sophistication of institutions that govern local government collaboration practice may affect transaction costs associated with collaborative decision-making and implementation. A high level of institutionalization, defined as well-defined rules and regulations, reduces the likelihood of frictions due to incomplete prescriptions and helps to overcome potential problems arising from high structural complexity (Van de Ven, 1976). Thus, it lowers transaction costs involving frictions and complexity. Moreover, under circumstances where well-defined institutions and technology can contribute to low transaction costs, individuals are willing to be engaged in exchange or cooperation. In this regard, well-defined institutional arrangements play an important role in enforcing and facilitating collective actions. To summarize, the level of institutionalization is expected to be in a negative relationship with transaction costs and in a positive relationship with collaboration among participants. It leads to the following hypothesis:

***H1f:** The degree of collaboration is positively associated with the level of institutionalization.*

3.2. The Degree of Collaboration and Performance

Local governments collaborate, despite potential high transaction costs associated with collaborative process, anticipating better outcomes than they could have achieved individually. Benefits from collaboration include the following. First, collaborative decision-making enables parties to account for benefits and costs expected to impact not only themselves but other parties (i.e., externalities) from the beginning (Olberding, 2009). It can save potential social welfare loss that may arise from suboptimal decisions made by self-interested, albeit interdependent, actors. This, inversely speaking, suggests the potential to reach a more, if not first-best, optimal solution where society-wide net benefits are higher (Olberding, 2002, 2009). In this regard, the collective action perspective provides an intuitive reason for independent actors to opt for a collaboration strategy; they collaborate to obtain higher joint benefits or reduce joint harm (i.e., greater positive externalities and fewer negative externalities) (Ostrom, 1990).

Second, collaborative planning processes pursue solutions that may serve common interests of all partners. According to Frame, Gunton, and Day (2004), a collaborative planning process produces agreements that are in general easier to implement and more durable because a wide spectrum of interests are considered throughout the process. Therefore, a successful collaborative process is likely to resolve potential conflicts among collaboration partners (Frame, Gunton, & Day, 2004).

Third, a high-quality collaborative process can produce positive side-effects. Agreements are often considered as a primary objective of collaborative processes. However, in many cases, collaborative processes go beyond reaching agreements. They build shared intellectual capital, mutual understanding, trust, and social capital that may lead to more fundamental systemic change (Innes & Booher, 1999). In other words, these by-products from good collaborative processes, in fact, increase the collaboration participants' capacity to achieve better performance.

High-quality collaboration enables the dynamic processes of consensus building, implementation, assessment and adaptation and, in turn, allows a collaborative system to sustain and adapt to change and even to generate higher levels of performance (Innes & Booher, 1999). In this regard, Connick and Innes (2003) understand collaborative policy dialogue as a complex evolving system, in which a high-quality dialogue produces persistent mutual relationships, practices and norms through a learning process.

Prior research on collaborative planning or collaborative governance contends that a good consensus building model produces high-quality outcomes (Booher & Innes, 2002; Innes & Booher, 1999; Margerum, 2002). Margerum (2002), in line with the idea, suggests that an important factor affecting the effectiveness of collaborative governance is the quality of the collaborative process. There arise questions regarding the quality of collaboration; what are the criteria to evaluate collaborative process or how do we determine the quality of collaboration? This study evaluates a collaborative process with the concept of the degree of collaboration. In particular, the degree of collaboration indicates how well participants collaborate or how actively participants are engaged in collaborative process. Prior literature on collaborative governance (Ansell & Gash, 2008; Thomson & Perry, 2006) and collaborative planning (Connick & Innes, 2003; Healey, 1997; Innes & Booher, 1999) suggests some aspects of collaborative processes that are indicative of the degree of interlocal collaboration. They fall in two broad categories, communication and commitment.

First, the element of *communication* can affect the capacity of partnerships to achieve their economic development goals. Good collaborative processes seek to build consensus through communication and mutual interaction among parties (Healey, 1997; Innes & Booher, 1999). Communication will be assessed in terms of three components: face-to-face dialogue, consensus

building discussion, and information exchange. A face-to-face dialogue is the most unavoidable and effective communication mode; as a result, it allows the “thick communication” that is necessary for parties in communication to identify opportunities for mutual gains (Ansell & Gash 2007:16). Therefore, a face-to-face dialogue establishes the basis for a strong tie between the parties, “building trust, mutual respect, shared understanding, and commitment to the process” (Ansell & Gash 2007:16). The richer communication, accordingly, helps a good consensus building process because it allows thorough, if not complete, investigation of the issues and conflicts of interests in pursuit of creative resolutions (Ansell & Gash 2007; Innes & Booher 1999). In addition, effective information exchange helps convey documents gathered and transmit knowledge, and ultimately facilitate a shared understanding. In these ways, such communication modes help increase the effectiveness of interlocal collaboration for local economic development.

Second, the element of *commitment* to the collaborative process involves the time or efforts invested in collaboration. Broadly speaking, being defined as an obligation that arises from frequent interaction and denotes an intention to engage in future action (Coleman, 1990), commitment is seen as an important determinant leading to individuals’ some activities in a future context (Coleman, 1990; Nahapiet & Ghoshal, 1998). The actors making the commitment can be not only individual persons but also organizations and thus it can be made either at an individual or an organizational level. In the context of collective action, Robertson and Tang (1995) argue that individuals’ higher commitment toward a collective goal contributes to an effective collective action system. Further, in their analysis of the role of commitment in collective actions, they compare two different perspectives—organizational behavior and the rational choice. From the organizational behavior perspective, one’s psychological attachment to

the organization would be the most important factor for developing collective action systems. On the other hand, the rational choice perspective emphasizes objective conditions that prevent an individual from reneging on a promise. However, in spite of these differences, both share the underlying notion that individual parties' greater commitment to a shared goal drives the individuals towards a collaborative action in pursuit of the collective end (Robertson & Tang 1995).

It should be also noted that a higher-level of commitment to a collaborative process entails mutually beneficial relationships. Based on several case studies, Ansell and Gash (2007) find that greater commitment increases shared understanding among parties of different interests, and accordingly leads to a greater likelihood of conflict resolution and higher responsiveness to the demands of partner. In a similar vein, Burger et al. (2001) also point out the role of commitment in developing strong relationships among partners based on a good faith in the process of bargaining for mutual gains and its contribution to a success of the partnership.

Accordingly, this study expects that a greater degree of collaboration leads to a higher performance. Considering those antecedents of the degree of collaboration discussed previously, the following hypothesis tests its mediating effects on the relationship between factors influencing the degree of collaboration and economic performance:

H2: The performance of interlocal collaboration for economic development is positively associated with the degree of collaboration among participants in the collaborative process.

Based on the discussion so far, Figure 4 illustrates the relationships among the key constructs of the research, and provides the research framework.

[**Figure 1 about here**]

4. Research Method

The empirical analysis of this study involves three stages. First, an extensive survey was carried out with local officials at the upper level (i.e., metropolitan cities and provinces) and at the lower level (i.e., cities and counties) of local governments in Korea. Second, the original survey questionnaire items are reduced to a manageable set of underlying factors with factor analysis.⁴ It produces a meaningful classification for three segments of research model: factors representing physical/contextual, relational, and institutional attributes for independent variables; the degree of collaboration for a mediator; and performance in different aspects for dependent variables. Third, multivariate regressions examine the relationships between three sets of attributes and the degree of collaboration (H1). Then, the Baron and Kenny's three-step hierarchical regression approach (1986) is adopted to test the mediating effect of the degree of collaboration on the relationship between three sets of attributes and the performance of collaboration (H2). The following sections discuss each of these stages in detail.

4.1. Survey Procedure and Sample

4.1.1. Target Group Identification

The survey population comprises local officials in charge of or engaged in any type of interlocal partnerships for economic development purposes in Korea that either have been recently completed or are operating as of the end of 2012. Identifying a target group for data collection was a challenging task as there existed no single listing that contains the complete list of local partnerships to the point. Accordingly, I searched for available listings of interlocal

⁴ Generally, factor analysis is divided into two types: exploratory factor analysis and confirmatory factor analysis. The former attempts to reduce a set of original variables into a smaller set of underlying "factors." The latter posits that there are the underlying factors for a set of original variables and then test a specific hypothesis that certain variables belong to one factor, while others belong to the other factor (Kim and Mueller 1978). This study conducted confirmatory factor analysis.

partnerships for economic development in Korea that either have been recently completed or are operating as of 2012. The search process includes the multiple requests of information disclosure to central and local governments via the Korea Government Information Disclosure Portal (<http://wonmun.open.go.kr>). As a result, a comprehensive list was developed and it identifies a total of 112 interlocal partnerships for economic development⁵ in 94 local government (38.8 percent of the local governments in Korea).⁶

Once the list of partnerships was compiled, I prepared the list of contacts for local officials who are in charge of, or engaged in the identified partnerships. To develop the contacts, I searched for a table of job assignment, or any similar information, available at the websites of the 94 local governments and their collaborative agencies including seven Regional Development Committees (Capital, Chungchung, Honam, Gangwon, Daegyeong, Dongnam, and Jeju regions). If no information is available online, I made phone calls to local governments to acquire the contacts of in-charge officials. In cases that particular local officials engaged in the partnership could not be identified despite such effort, the heads of sections or departments which likely handle the partnership were added to the mailing list. Through these procedures, the list of 300 local officials was finally identified as a target group for the survey.

4.1.2. Sample

Based on the list, 300 questionnaires were distributed to the local officials in each of the 94 local governments in November, 2013. Of the 300 questionnaires distributed, 121 questionnaires

⁵ The partnerships are operated by three types of institutional arrangements -Local Government Association (LGA), Administration Consultative Council (ACC) and Partnership Contract (PC). While LGA and ACC need to form an organization for collaboration, PC is a functional collaboration without organization formation.

⁶ Ministry of Security and Public Administration in Korea (MOSPA) released the handbook of 2013 Regional/Local Government Administration providing the listings of interlocal partnerships based on institutional arrangement forms on February in 2014 (<http://www.mospa.go.kr>). The listing of interlocal partnerships for economic development reported in the handbook are almost identical to mine.

were returned and 19 of them were incomplete. Therefore, 102 completed questionnaires were used for statistical analysis, resulting in the effective total response rate of 34 percent.

[**Table 1 about here**]

The general demographic characteristics of the 102 respondents are shown in Table 1. The institutional arrangement composition of the sample departs somewhat from that of the population, with a higher proportion of respondents of Local Government Associations (LGAs) (32.3 vs. 15.7 percent) and a lower proportion of PCs (Partnership Contracts) (55.9 vs. 73.6 percent). However, the proportion of respondents of Administrative Consultative Councils (ACCs) was almost equivalent to that of the population (11.8 vs. 10.7 percent)⁷. Almost three quarters of the respondents are in their 40's and more. Approximately 73 percent of the responses come from middle-ranked officials (Grade 6 and Grade 7)⁸ who are working at a hands-on level. The respondents, on average, have been engaged in an interlocal partnership slightly longer than two years; the average length of service for the partnership is 29.7 months. These findings indicate that the respondents are experienced and well knowledgeable of their tasks. In addition, the table shows that 55.9 percent of the total respondents are from an upper-level local government (i.e., Province or Metropolitan City), which suggests that the responses are well balanced between the two levels of local governments.

4.2. Measures

⁷ The high response rate of LGA can be attributed to its organizational nature; all local officials in an LGA work together in one physical location, while those officials in the other forms of partnerships are geographically dispersed. Once a contact in an LGA is established it is easier to collect survey responses from the local officials working together. For example, it allowed even the respondents of LGA who were not in the survey list to be encouraged by their colleagues and supervisors to participate in this survey. Despite the overrepresentation of LGA, no weighting procedure was applied because (1) the exact population of local officials engaged in interlocal collaborative projects is hardly identifiable, and (2) the unit of analysis of this study is an individual local official's response.

⁸ The civil service program in Korea is composed of nine grades (Grade 1 is a highest position).

The survey questions were constructed based on an extensive review of theoretical and empirical literature as well as in-depth interviews with six experts in Korea. In particular, the interviews provided practical insights into how the interlocal partnerships operate in Korea, ensuring that my survey items are solidly grounded in reality. The questionnaire includes the items about (1) demographics of a respondent, (2) descriptive information about the interlocal partnership in which a respondent is engaged, and (3) research variables that are designed to capture the constructs of my research interest. For most questions, responses are structured in a Likert-type scale ranging from 1= “not at all” to 5= “to a great extent.” The questions regarding the effectiveness and efficiency of collaboration ask for ratio scale responses.

Table 2 summarizes all the constructs and their measurement used in this study, matched with variables. Most of the variables are measured primarily with survey questions, except for geographical proximity (GEOPROXI), social/political similarity (SOCPOLSIMIL), local economic status (UNEMPLOY), and the significance of a partnership (IMPORTANCE) which are calculated with public data.

[Table 2 about here]

This study applies factor analysis to establish convergence and divergence validities the survey questions, mapping them into the underlying, primarily theory-driven constructs. Factors are identified within each of three segments: antecedents, mediators, and outcomes. They are basically equivalent to independent, mediating, and dependent variables respectively in the research model. However, non-survey measures (i.e., the variables of GEOPROXI and SOCPOLSIMIL) and survey measures in a scale other than a Liker-type (the variables of %ACHIEVED and EFFICIENT) are not considered in the factor analysis. Overall, the outcomes confirm that survey questions are prepared appropriately to capture intended

constructs, showing convergences among variables of a construct and divergences between those of different constructs. Then, the factor analysis generates factor scores, as the product sum of the factor loadings and the original scale of observed variables.⁹ They constitute the latent variables, or “factors,” that are used in subsequent statistical analyses.

[**Table 3 about here**]

Table 3 summarizes the results of the factor analysis.¹⁰ Panels A, B, and C represent the three segments of independent variables (i.e., antecedents), mediator, and dependent variables (i.e., outcomes). First, Panel A shows that regarding antecedents of collaboration, four factors are extracted: resource dependence (IF1_RESDEPEND), perceived competition (IF2_COMPET), trust in partners (IF3_TRUST), and the level of institutionalization (IF4_INSTITUTION). Three factors have moderate to high Cronbach’s alpha coefficients: IF1_RESDEPEND (.51), IF3_TRUST (.92), and IF4_INSTITUTION (.91). Second, Panel B indicates that three factors for mediators are identified: commitment to mutual relationships and goals (MF1_COMMITMENT), quality of general communication (MF2_QUAL_COMM), and effectiveness of formal joint group meetings, as a sub-dimension of communication (MF3_GROUPMEET). The three factors have Cronbach’s alpha coefficients of .94, .93 and .89 respectively. Third, the factor analysis with the variables of collaboration performance is run separately for two conceptually distinctive constructs: the contribution to the development of local economy (i.e., economic contribution) and the contribution to the growth of organizational

⁹ Factor score is computed with the Thurstone’s regression approach (Thurstone, 1935).

¹⁰ The approach of Varimax orthogonal rotation with Kaiser normalization is used because it attempts to minimize the number of variables that have high loadings on each factor and results in solutions that are easier to interpret and to report (Pallant 2013). Prior to performing factor analysis, testing the suitability of data for factor analysis reveals that the data meets conventional standard for factor analysis with the Kaiser-Meyer-Olkin (KMO) values of .60 or higher (Kaiser, 1970) and the Bartlett’s Test of Sphericity values significant at the .05 level or better (Bartlett, 1954).

capacity (i.e., capacity growth).¹¹ Panel 3 shows that each of the factor analysis produces one factor. One (DF1_PERFORM) is for the performance in economic terms, while the other (DF2_PERFORM) is for the performance in organization perspectives. The high Cronbach's alphas (.88 and .92) indicate that the constituent variables in each variable reliably and consistently capture the intended constructs.

In sum, the table suggests that the design of multiple measurements is generally successful. In particular, the factor analysis maps variables into constructs in a consistent manner as they are discussed in theory; grouping similar variables into a construct and distinguishing different variables between constructs.

5. Empirical Analysis and Finding

5.1. Factors Influencing the Degree of Collaboration

Bivariate correlations among the research variables suggest potential antecedents of the degree of collaboration (Table 4). First, trust in partners (IF3_TRSUT) and the level of institutionalization (IF4_INSTITUTION) are positively correlated with two factors of the degree of collaboration (MF1_COMMITMENT and MF2_QUAL_COMM). Second, interestingly, the socio-political similarities among the heads of local governments in a partnership (SOCPOLSIMIL) show negative, albeit insignificant or weakly significant, correlations with the factors for the degree of collaboration. It is the opposite of the prediction that greater similarities facilitates collaboration. Third, the other dimension of the degree of collaboration, or the

¹¹ The factor analysis including all the strategic performance variables results in a single factor. Indeed, the economic performance and the organizational growth are found to be highly correlated. Despite the statistical output, as they are developed as distinctive constructs, the following analyses report the results adopting the two-factor approach. The single factor for the performance of collaboration is also tried, but it does not yield meaningful differences in the analyses.

effectiveness of communication through formal meetings (MF3_GROUPMEET), is associated only with resource dependence (IF_RESDEPEND) among the six potential antecedents.

Additionally, the table also reveals the relationship between the degree of collaboration and the performance of collaboration. First, all of the three factors for the degree of collaboration (Items 7, 8, and 9 in the table) are positively correlated with the both factors of strategic performance: economic contribution (DF1_PERFORM) and organizational capacity growth (DF2_PERFORM). Second, to the contrary, the results generally do not support positive influences of the degree of collaboration on the other two dimensions of *direct* performance, i.e., the effectiveness (%ACHIEVED) and the efficiency (EFFICIENT) of a partnership. The exception is the positive and significant correlation ($r=.265$, $p<.01$) between commitment (MF1_COMMITMENT) and effectiveness (%ACHIEVED).

[Table 4 about here]

Table 5 presents the results of multivariable regressions to test the direct effects of contextual, relational, and institutional attributes on the degree of collaboration (H1). The regression models include control variables (Δ UNEMPLOY and IMPORTANCE). Overall, the regression models are fairly specified. The F-values are statistically significant in all models and the adjusted R^2 statistics range between 10.5 percent (Model 3) and 61.4 percent (Model 1). The multivariate regressions report the following findings.

[Table 5 about here]

First, resource dependence on partners (IF1_RESDEPEND) negatively affects commitment to mutual goals and relationships (MF1_COMMITMENT), but positively affects the effectiveness of formal joint meetings (MF3_GROUPMEET). This indicates that when partners

relying more on the others' resources in a collaborative project may make less commitment. This is against my prediction that greater reliance on partners' resources leads to greater commitment. The finding may suggest a possibility of an opportunistic behavior. For example, ex ante, a local government lacking certain resources may well make commitment to establishing a partnership with others with the resources, which is consistent with the prior literature (Krueger & McGuire, 2005). Later once the partnership is established and thus resources are secured, the position may change; it may be less committed to the partnership operation because the local government's equity in the partnership is relatively lesser. On the other hand, the positive association found in Model 3 supports H1a. However, the two opposite observations are not incompatible. In particular, despite the observed potential change in the level of commitment, greater reliance on partners' resources still encourages a partner to benefit from the outcomes and decisions of formal joint meetings.

Second, geographical proximity among participating local governments (GEOPROXI) displays similar behaviors with resource dependence. However, the statistical significance rests only in Model 3 ($\beta=.204$, $p<.10$), which makes a complete sense in that more frequent joint meetings are held to generate more practical ideas for collaboration. Thus, the finding weakly supports H1b.

Third, the effect of socio-political similarities (SOCPOLSIMIL) does not fully support H2c. In part, the positive, albeit marginally significant ($p=0.107$), coefficient in Model 1 supports the prediction that greater similarities in social and political backgrounds shared among the heads of local governments allow greater commitment. However, it seems that similarities do not necessarily help to improve the quality of communication executed at a hands-on staffs. All in all, the findings suggest very limited effect of the social connections, in either directions.

Fourth, the results pertaining to the perceived competitive relationship (IF2_COMPET) with partners partly support H1d. In Model 1, the coefficient on IF2_COMPET shows a positive association with the participant's commitment to mutual relationships and goals, which is contrary to my prediction. The positive association may illustrate the complementarity of resources. To understand this perspective, it should be noted that local governments in a competitive relation likely have economic and industrial resources of similar kinds. For this reason, they may recognize the complementarity of their resources for an effective partnership.

Fifth, greater trust in partners (IF3_TRUST) and well-constructed institutions (IF4_INSTITUTION) may improve the quality of collaboration process by enhancing commitments to mutual goals and relationships and communication among participants. The findings strongly support H1e and H1f.

5.2. Mediating Effects of the Degree of Collaboration

Hypothesis 3 examines the mediating effects of the degree of collaboration on the performance of collaboration. To show the mediating role of a variable, this study employs a conventional procedure recommended by Baron and Kenny (1986). The procedure is done in three steps: (1) regressing the dependent variable (i.e., performance of collaboration) on the independent variables (i.e., contextual, relational and institutional attributes), (2) regressing the mediators (i.e., degree of collaboration) on the independent variables, and (3) regressing the dependent variable on both the mediators and the independent variables. To establish that the mediator mediates the relationship of independent variable and dependent variable, the following conditions must hold. First, the independent variable must have significant effects on the dependent variable in the first regression. Second, it should be shown that the independent variable also affects a potential mediator in the second regression. Third, it is critical part of the

analysis to see whether the effect of the mediator on the dependent variable exists even when an independent variable is controlled for and, at the same time and whether the effect of an independent variable is mitigated when the mediator is introduced. If these conditions hold, a mediation effect is deemed to exist. The full mediation is a special case for when the effect of the independent variable is completely eliminated (i.e., no longer significant) in the final step (Baron & Kenny, 1986; Choi, 2009).

Following the Baron and Kenny's procedure, this section runs three sets of regressions in a hierarchical way to examine whether the *first* and *third* conditions for mediation hold. In the preceding section, the multivariate regressions in Table 5 report that all independent variables affect at least one of the suspected mediating factors, which validates the relationships required for the *second* mediation condition.

In this study, a set of control variables (UNEMPLOY and IMPORTANCE) are first entered (Model 1). Then, Model 2 adds independent variables (IF1_RESDEPEND, GEOPROXI, SOCPOLSIMIL, IF2_COMPET, IF3_TRUST, and IF4_INSTITUTION) to the regression, and tests their effects on the dependent variable for the performance of collaboration (either DF1_PERFORM or DF2_PERFORM). These two regression models assess the impact of the independent variables on the performance of collaboration, after controlling for the influence of control variables. They examine whether the first condition for mediation holds. Finally, the three mediating factors (MF1_COMMITMENT, MF2_QUAL_COMM, and MF3_GROUTMEET) are added to the second regression equation to form Model 3 where, if any, the presence of a mediation effect may be confirmed.

[**Table 6 about here**]

Table 6 presents the results of the hierarchical regression analysis against two strategic performance factors, i.e., economic contribution (DF1_PERFORM) and capacity growth (DF2_PERFORM).¹² Panel A of Table 6 reports the results from the hierarchical regressions of *economic contribution* (DF1_PERFORM). In general, the findings suggest some mediation effects of the degree of collaboration. Model 1 illustrates that the control variables (UNEMPLOY and IMPORTANCE) account for 5 percent of the variance in economic contribution. However, only UNEMPLOY makes a statistically significant contribution to the model. The addition of the six independent variables in Model 2 significantly improves the estimation of economic contribution. The independent variables explain an additional 16.2% of the variance in economic contribution (F-stat for $\Delta R^2 = 2.189$, $p < .01$), even when the effects of the control variables are statistically controlled for. However, only two variables out of six are statistically significant: IF1_RESDEPEND ($\beta = .334$, $p < .01$) and IF3_TRUST ($\beta = .184$, $p < .05$). The findings support the direct effect of some independent variables on economic contribution. The earlier test of the relationship between independent variables and mediators (see Table 5) finds that IF1_RESDEPEND and IF3_TRUST are statistically significant predictors of the degree of collaboration. In sum, Model 2 and the previous results reported in Table 5 satisfy the first two necessary conditions for a mediation effect. In Model 3 with the three mediators entered, the two independent variables that are significant in Model 2 do not show significant associations with DF1_PERFORM any longer. In contrast, the mediators are robust to display significant relationships with DF1_PERFORM. The findings suggest that the direct effects of these two independent variables (IF1_RESDEPEND and IF3_TRUST) are completely undermined by those of the mediators, i.e., the full mediation. Moreover, the three mediators

¹² The direct performance of a partnership will be discussed later in the section.

account for an additional 10.2 % to the variance in economic contribution, which is statistically significant (F-stat for $\Delta R^2 = 4.456$, $p < .01$). These findings together provide strong support for the mediation effect argument that the degree of collaboration fully mediates the effects of resource dependence on partners (IF1_RESDEPEND) and trust in partners (IF3_TRUST) on the performance of collaboration in economic contribution. Consequently, it indicates that greater resource dependence on partners and trust in partners increases the degree of collaboration that, in turn, contributes to higher performance in terms of the economic contribution of interlocal collaboration.

Panel B of Table 6 shows the results from the hierarchical regression analysis against the second performance factor, i.e., capacity growth (DF2_PERFORM). Similar to the previous results for DF1_PERFORM, it also identifies the mediation effects of the degree of collaboration on DF2_PERFORM. In Model 1 of the second hierarchical regression analysis, none of the variables explains the variation in capacity growth. On the other hand, the inclusion of the six independent variables significantly improves the explanatory power by 22% (F-stat for $\Delta R^2 = 4.489$, $p < .01$). However, only IF3_TRUST ($\beta = .376$, $p < .01$) and IF4_INSTITUTION ($\beta = .279$, $p < .01$) pick up statistical significance. As shown in the preceding test (see Table 5), these two factors are found to be associated with the degree of collaboration (MF1_COMMITMENT and MF2_QUAL_COMM), which satisfies the second condition for mediation. However, the significant direct effects of IF3_TRUST and IF4_INSTITUTION disappear in Model 3, as the three mediators are introduced with additional explanatory power of 7.2% (F-stat for $\Delta R^2 = 3.231$, $p < 0.05$). Unlike the results for DF1_PERFORM, the analysis for DF2_PERFORM presents significance only for two mediators that are related to communication. This suggests that commitment to the current partnership project(s) does not necessarily expand the organizational

capacity but effective communication makes the contribution. Finally, in Model 3, SOCPOLSIMIL gains significance but the effect is marginal ($p < .10$). Considering all together, these findings support that the effects of trust in partners (IF3_TRUST) and the level of institutionalization (IF4_INSTITUTION) on the strategic performance of collaboration in terms of a local government's organizational capacity growth (DF2_PERFORM) is mediated by the effectiveness of communication both in overall communication (MF2_QUAL_COMM) and through formal joint meetings (MF3_GROUPMEET). It means that a greater level of trust and institutionalization can increase commitment and communication that, in turn, contribute to local capacity growth for economic development.

In addition to the indirect strategic performance of collaboration (i.e., economic contribution and capacity growth), the *direct* performance of collaboration is examined. However, the results are not tabulated because the hierarchical regressions against partnership effectiveness (%ACHIEVED) and efficiency (EFFICIENT) do not provide any meaningful implications. In particular, none of the three mediating factors and the independent variables turns out to be associated with these measures of direct performance. Furthermore, all the regression models show little explanatory power; adjusted R^2 statistics range from 0.5 percent to 7.9 percent at best. It indicates that the models hardly explain any effects on partnership effective and efficiency performance. The poor model specification may, presumably, arise from other potentially critical determinants of the direct performance that have not been discussed in this study. Alternate sources of variations in the direct performance might include local government's financial independence from a central government, local government financial capacity (e.g., local government level- upper or lower), and a project's characteristics such as the length of a project.

Even other environmental/economic factors such as a general national or global economic situation might be other important determinants of the immediate performance of a partnership.

6. Conclusion and Discussion

This study investigates the conditions under which participants are willing to be more collaborative and examines whether more collaborative process serves its purposes, leading to the achievement of the shared goals that, in this study's specific context, are mostly relevant to economic prosperity of local governments in collaboration. To that end, this study conducts a nation-wide survey over local officials and collects a unique set of data regarding interlocal partnerships created mainly for local economic development in Korea.

6.1. Summary of Findings and Discussion

First, this study finds a set of factors facilitating collaboration. They include resource dependence on partners, geographical proximity, perceived competition, trust in partners, and the level of institutionalization for the partnership. All of them show significant positive relationships with at least one of the factors of the degree of collaboration, as expected. Among them, trust in partners and the level of institutionalization for the partnership appear to be the key determinants that, consistently and significantly, affect participants' commitment to mutual relationships and goals, and the quality of communication to enhance consensus building and information exchange. Looking further into the relationships, it is also notable that trust shows a stronger association with the level of commitment than institutionalization, while institutionalization has a stronger association with the quality of communication than trust does. It suggests that trust matters the most in promoting commitment and institutionalization matters the most in building effective communication.

On the other hand, unlike the consistent and clear implications of trust and institutionalization, some findings require more careful interpretations. First, resource dependence positively affects the effectiveness of formal group meetings but negatively affects commitment to mutual goals and relationship. Its negative effect on commitment may suggest an alternative explanation. In particular, the observation may describe a local government's opportunism, suggesting that parties with relatively less resource might act opportunistically once a partnership that they eagerly have pursued is established. Second, social and political similarity has an effect opposite to the expectation, showing that social capital established among governors or mayors of participating local governments might not necessarily play a positive role in sharing information for better collaboration. The reason for the result is still questionable and thus requires further investigation. Third, perceived competition has a negative effect on communication, as expected but has a positive effect on commitment, contrary to the expectation. A plausible alternative explanation for this result comes from the complementarity of industrial or economic resources that local governments in competition likely possess in common. In particular, it is worth attention that local governments in a competitive relation likely have similar representative industries. Because of the overlap of economic resources, they may be more willing to make greater commitment to common economic goals, perhaps to achieve greater economies of scale. However, this does not exclude other possibilities.

Second, the principal test of this study regards the mediating effect of the degree of collaboration on the relationship between contextual, relational, and institutional factors and the performance of collaboration. This study provides support for full (partial) mediation of the degree of collaboration on the relationship between the resource dependence and trust (trust and the level of institutionalization) and the performance in economic contribution (the performance

in capacity growth). However, it does not find any associations with direct performance measures of a partnership—i.e., in effectiveness and efficiency. The result is yet inconclusive because it is highly subject to many other influential factors that can hardly be disentangled from the effect of collaboration. Potentially, the inconclusive result might have stemmed from the weakness of a survey research. The survey items about the two measures of direct performance are intended to ask local officials to evaluate *each* of their interlocal collaborative projects at the level of a partnership. However, it is still probable that some respondents aggregate their evaluation of several projects under their management to provide a single response instead of several responses, which may have introduced a noise into the measure. More importantly, the responses are not free from a bias due to the nature of subjective evaluation. In this regard, it could have been better to obtain any object, hard data about the direct economic performance of a partnership project. However, to my best knowledge, it is not available at least publicly or hardly collected in a systematic manner.

6.2. Implication and Contribution

The findings from this study are important for the following reasons. First, it suggests three dimensions of collaboration, demonstrating that the degree of collaboration among participants can be measured by three key factors. Collaboration is an abstract, complex, and multidimensional concept and there is still lack of consensus even among scholars in public administration and management (Thomson et al. 2007). In this regard, the key implication of this study is to identify the key elements of collaboration and provide plausible measures of the degree of collaboration. The measures discussed in this study encompass the key elements of five dimensions of collaboration process (i.e., governance, administration, autonomy, mutuality, and norms) empirically identified by Thomson et al. (2007). Thereby, this study contributes to

future research on collaborative governance and interlocal or intergovernmental relations, providing how to identify the key elements of collaborative process or the intensity of collaborative relationships. Furthermore, it also provides a practical guideline for policy makers and public managers to better understand the diverse aspects of collaboration to improve performance of collaborative projects. Especially, it will help local governments in Korea, where interlocal collaboration is at a beginning state, to find effective collaborative decision-making and implementation for better performance.

Second, it provides evidence about our conventional belief that the relational capital (or social capital) established through better and stronger collaborative efforts can lead to better collective outcomes, which can be applied to other areas of collaboration. In particular, collaboration has a positive effect on strategic performance. The finding suggests that greater commitment to current collaborative projects can not only contribute to overall local economy, but also increase the capacity or potential to accomplish other (future) projects for local economic development. In other words, a successful collaboration experience (with positive strategic performance), in turn, may lead to trust building among previous partners, consequently contribute to greater collaboration among them and eventually improve performance in subsequent collaboration projects. This virtuous circle may produce and accumulate social capital among partners of repeated collaborative relationships.

6.3. Limitation

While this study makes important contributions to the collaboration literature, some potential limitations should be noted. First of all, it has relatively a small sample size. It concerns with issues related to the degree of freedom and statistical power, limiting the number of variables that can be used in statistical analyses. Had it been in a larger sample size (at least 200

or more¹³), the Structural Equation Modeling (SEM) technique could have been applied for a more rigorous analysis on the complex relationships among independent, mediating and dependent variables. Second, a limitation pertains to the use of only Korean data, although the variables constructed from the concepts explaining a general interlocal relationship. The findings in this study may be sensitive to cultural, institutional, or administrative sources that are unique in Korea. So, evidence under other environments or from analyses of a large dataset may expand the validity of the findings in this study. Third, the evaluation of local officials supervising, as opposed to simply being engaged in, collaborative projects might be meaningful because it can measure collaboration process and outcomes more directly. However, it is still subject to measurement issues arising from self-evaluation of collaboration and performance: for example, biases due to subjectivity and incomparability.

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¹³ Kline (2011) suggests 200 as a minimum observations appropriate for an SEM.

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Appendix I: Survey Questionnaire

Demographic information

1. Age: ① 20's ② 30's ③ 40's ④ 50's or older
2. Gender: ① Male ② Female
3. Local government:
4. Position (Department):
5. Years in the current department: (years months)
6. The level of local government
 - a. Metropolitan city (*Gwangyeok-si*)
 - b. Province (*Do*)
 - c. City with population of more than 5 hundred thousand (*Si*)
 - d. City with population of less than 5 hundred thousand (*Si*)
 - e. Autonomous ward (autonomous *Gu*)
 - f. County (*Gun*)
7. Interlocal collaboration projects you are involved:
8. Partner local governments in the collaboration projects:
9. Project period: From () To ()
10. Total project budget:
11. Type of institutional arrangement for collaboration:
12. Project area (e.g., industrial district development, tourism, R&D):
13. Partnership organization for coordination and management:

I. Institutionalization level for collaboration (a five point Likert scale; from 1="not at all" to 5= "to a great extent")

1. Authorities of participating government agencies are clearly assigned
2. Roles and responsibilities of actors (i.e., individuals) are clearly defined
3. How to resolve the conflicts among participating institutions is well defined
4. Policy and decision making process and methods are clearly defined
5. Common goals, objectives, and visions of collaborative projects are well defined
6. The director selection process is transparently and rationally defined
7. Promotion process is transparently and rationally defined

II. The evaluation on the relationship with partners and collaborative process (a five point Likert scale; from 1="not at all" to 5= "to a great extent")

1. The communication with your partner helps to build consensus
2. The consensus building process with your partner helps to facilitate mutual understanding
3. You are willing to share information with your partner
4. Your partner are willing to share information with you
5. High-quality information for successful collaboration is exchanged in collaborative process.
6. You make a strong effort to address, if any, conflicts with your partner
7. Your partner make a strong effort to address, if any, conflicts with you
8. The conflicts with your partner are resolved in a satisfactory manner
9. You make an effort to promote a good relationship with your partner
10. Your partner make an effort to promote a good relationship with you
11. The relation with your partner is being improved through effective collaborative process
12. You is effectively responded to your partner's demands

13. Your partner is effectively responded to your demands
14. You ensure your partner's compliance to the agreement
15. You trust that your partner will react in a collaborative manner to your collaborative response
16. You trust that your partner has an ability to perform your collaborative project
17. You trust that your partner will not act opportunistically
18. You trust that the profits obtained from the collaborative projects will be fairly distributed to participating local governments
19. You think you receive reliable (confidential) information and service
20. You pursue common goals of collaborative project, rather than your own goals
21. Your partner pursue common goals of collaborative project, rather than his/her own goals
22. You often meet or contact with your partner
23. Newly obtained information is immediately shared with your partner
24. You often have formal group meetings with your partner (e.g., a task-force team meeting or joint group meeting) to generate and develop new ideas or plans
25. You often have communication with your partner through informal channels
26. The ideas or plans generated through group meetings are accepted and implemented
27. The group meetings have contributed to the success of collaborative project
28. Your local government are in completion with your partner to attract investment for local economic development

III. Resource dependence for interlocal collaboration

Suppose that 100% indicates the resources including financial, personnel, and managerial capacity mobilized by your government and partners to complete a targeted project.

1. Please indicate how much of the required resource is available to your own government.
2. How much are you dependent on partner's resources? (a five point Likert scale)
3. To what extent the partner's resource is needed to accomplish the project? (a five point Likert scale)

IV. Interlocal collaboration performance

1. To what extent (in percentage) of targeted goals of the partnership have you achieved?
2. What is the ratio of output over input in your partnership?

The following questions are evaluated based on a five point Likert scale

3. The primary goal of the partnership to develop the local economy has been achieved more, compared with other economic projects.
4. The partnership has contributed to the development of your local economy more, compared with other economic projects.
5. The project has contributed to general local economic development in your own local government.
6. The partnership has contributed to other (current or future) local businesses development in your own government.
7. The partnership has contributed to the increase in the region's capacity for economic development.
8. Your local government has obtained a lot of knowledge about local development strategies through this collaborative project.
9. Your local government will initiate many new local development projects based on the

knowledge learned from this project.

10. This project helped your region's innovation and suggested new strategies for your local economic development.

Figure 1: Research Model

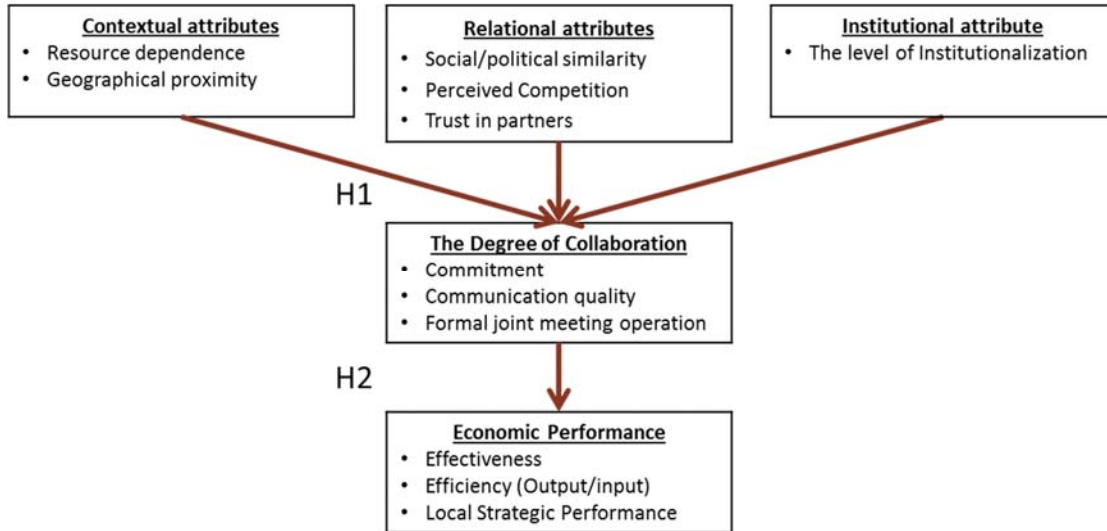


Table 1: Demographic Characteristics of Survey Respondents (N=102)

Category		Frequency	%
Forms of Institutional Arrangement for Interlocal Collaboration	Local Government Association (LGA)	33 (47)	32.30% (15.7%)
	PC (Partnership Contract)	57 (221)	55.90% (73.6%)
	ACC (Administrative Consultative Council)	12	11.80%
		(32)	(10.7%)
Age	30's	27	26.50%
	40's	48	47.10%
	50's or older	27	26.50%
Position (Grade)	4	4	3.90%
	5	5	4.90%
	6	32	31.40%
	7	43	42.20%
	8	5	4.90%
	9	4	3.90%
	Researcher	8	7.80%
	Not indicated	1	1.00%
Length of Service for a Partnership	Shorter than 12 months	34	33.30%
	Between 12 to 24 months	32	31.40%
	Longer than 24 months	33	32.40%
	Not indicated	3	2.90%
Local Government Level Upper-level	Province (Do)	26	25.50%
	Metropolitan city Population over 1,000,000 (Gwangyeok-si)	31	30.40%
		57	55.90%
Lower-level (Municipality)	City population 1,000,000-500,000 (Si)	4	3.90%
	City population 500,000-150,000 (Si)	19	18.60%
	County population less than 150,000 (Gun)	22	21.60%
		45	44.10%

Note: The number in parentheses of the column of frequency (percent) indicates the number (percent) of survey distributions (i.e., population) in terms of the forms of institutional arrangements.

Table 2: Measures of Research Variables

Construct	Variable	Description	Measurement
<i>Independent Variables: Physical/Contextual, Relational, and Institutional Attributes)</i>			
Resource dependence	PTNAVAIL	Partner's resource availability	.05*(100-Local Own Resource Availability, LORA): LORA was measured by QIII-1.
	PTNDEP	Dependence on partner's resource	QIII-2
	PTNNEED	Needs for partner's resources	QIII-3
Geographical proximity	GEOPROXI	Geographical proximity ^a	Naver Map
Social/political similarity	SOCPOLSIMIL	Social/political similarity among governors or mayors ^b	Naver People Search
Perceived competition	COMPET	Perceived competitive relation	QII-28
Trust in partners	RELIABLE_1	Reliability about partner's compliance to the agreement	QII-14
	RELIABLE_2	Partner's ability to perform the collaborative project	QII-16
	FAIR	Fairness about collaboration profit distribution	QII-18
	GW_1	Good will associated with norms of reciprocity	QII-15
	GW_2	Not opportunistic act	QII-17
	GW_3	Reliable information/service provision	QII-19
The level of Institutionalization	AUTHORITY	Authority assignment	QI-1
	TASKDISTR	Task distribution	QI-2
	CONFRESOL	Conflict resolution	QI-3
	DECPROC	Decision-making process	QI-4
	GOALDEF	Goal definition	QI-5
	LEADER	Leadership	QI-6
	PROMO	Promotion	QI-7.
<i>Mediators: The Degree of Collaboration</i>			
Communication	FREQ_CONT	General contact frequency with partner	QII-22
	CONSENSUSBLD	Effective communication for consensus building process	QII-1
	UNDERSTAND	Mutual understanding facilitation	QII-2
	OWILLINFOSH	Willingness to share information	QII-3
	PWILLINFOSH	Partner's willingness to share information	QII-4
	HQLTYINFOSH	High quality information provision	QII-5

	QUICKINFOSH	Immediately new information sharing	QII-23
	FREQ_MEET	Communication frequency through formal group meetings	QII-24
	IDEAACCEPT	Group idea implementation	QII-26
	MTGHELPFUL	Group meeting's effectiveness	QII-27
Commitment	OE_CONFRESOL	Efforts for conflict resolution	QII-6
	PE_CONFRESOL	Partner's effort for conflict resolution	QII-7
	OE_RELATION	Efforts to promote a good relationship	QII-9
	PE_RELATION	Partner's efforts to promote a good relationship	QII-10
	RELIMPROVE	Relation improvement	QII-11
	OR_DEMAND	Respond to partner's demands	QII-12
	PR_DEMAND	Partner's respond to my demands	QII-13
	OGOALCOM	Common goal pursuit	QII-20
	PGOALCOM	Partner's common goal pursue	QII-21
<i>Dependent Variables: Performance of Collaboration</i>			
Partnership effectiveness	%ACHIEVED	The degree of achievement of targeted goals of the partnership	QIV-1
Partnership efficiency	EFFICIENT	The ratio of output over input of the partnership	QIV-2
Economic contribution	RELPERFORM	Overall economic performance (relative to other projects)	QIV-3.
	CONTRIBCON	Contribution to local economy (relative to other projects)	QIV-4.
	ABSPERFORM	Overall economic performance	QIV-5.
	CONTRIBOTH	Contribution to the growth of other relevant businesses	QIV-6.
Capacity Growth	CAPAINCR	Capacity increase	QIV-7
	LEARNING	Learning strategic knowledge	QIV-8
	KNOWLTRANS	Knowledge transfer	QIV-9
	INNOVATION	Innovation	QIV-10
<i>Control Variables</i>			
Local economic status	UNEMPLOY	Unemployment rate change ^c	Korean Statistical Information Service
Significance of partnership	IMPORTANCE	Relative size of the partnership ^d	Korean Local Finance Open System

Note: ^a geographical distance between a pair of local governments in the partnership*-1, ^b Average of the similarity score for each pair with respect to five social/political factors of hometown, education background, college alma mater, previous profession, and political parties (1= counterparts in a pair of local government are same in each demographic element, 0 otherwise), ^c Average unemployment rate for 5 years from 2009 to 2013, and ^d the ratio of a total expense of the partnership to a total amount of budget of a local government.

Table 3: Factor Analysis Results and Reliability Test Results

Panel A: Rotated Component Matrix of Independent Variables

Variables	Factor 1	Factor 2	Factor 3	Factor 4
PTNAVAIL	0.608	-0.562	-0.083	0.004
PTNDEP	0.711	0.01	-0.229	0.04
PTNNEED	0.783	0.303	0.23	-0.092
COMPET	0.202	0.759	-0.231	0.011
RELIABLE_1	-0.074	0.051	0.813	0.362
RELIABLE_2	-0.045	-0.019	0.764	0.372
FAIR	-0.096	-0.002	0.786	0.293
GW_1	-0.102	-0.017	0.794	0.39
GW_2	-0.01	-0.187	0.782	0.212
GW_3	0.108	-0.171	0.742	0.351
AUTHORITY	0.166	0.029	0.266	0.773
TASKDISTR	0.084	0.041	0.358	0.79
CONFRESOL	0.048	-0.148	0.191	0.762
DECPROC	-0.173	-0.165	0.255	0.781
GOALDEF	-0.051	0.157	0.281	0.75
LEADER	-0.074	0.159	0.33	0.729
PROMO	-0.09	-0.088	0.305	0.647
Description	Resource dependence	Perceived competition	Trust in partners	Institutionalization
Label	IF1_ RESDEPEND	IF2_ COMPET	IF3_ TRUST	IF4_ INSTITUTION
Eigenvalue	1.7	1.2	4.4	4.6
% of Variance	9.71%	6.82%	25.89%	27.15%
Cronbach's α	0.51	-	0.92	0.91

Table 3: Factor Analysis Results and Reliability Test Results (Continued)

Panel B: Rotated Component Matrix of Mediating Variables

Variables	Factor 1	Factor 2	Factor 3
CONSENSUSBLD	0.381	0.727	0.123
UNDERSTAND	0.441	0.711	0.061
OWILLINFOSH	0.386	0.821	0.113
PWILLINFOSH	0.286	0.873	0.04
HQLTYINFOSH	0.273	0.829	0.136
QUICKINFOSH	0.286	0.618	0.223
FREQ_CONT	0.543^a	0.434	0.19
OE_CONFRESOL	0.523	0.477	0.16
PE_CONFRESOL	0.498	0.666^b	0.13
OE_RELATION	0.843	0.264	0
PE_RELATION	0.779	0.429	0.016
RELIMPROVE	0.786	0.275	0.107
OR_DEMAND	0.819	0.346	0.065
PR_DEMAND	0.751	0.408	0.07
OGOALCOM	0.715	0.277	0.222
PGOALCOM	0.649	0.322	0.277
FREQ_MEET	0.063	0.041	0.812
IDEAACCEPT	0.106	0.199	0.917
MTGHELPFUL	0.161	0.132	0.909

Description	Commitment to mutual relationships and goals	Effective communication for consensus building and information sharing	Effective formal joint meetings
Label	MF1_COMMITMENT	MF2_QUAL_COMM	MF3_GROUPMEET
Eigenvalue	5.7	5.3	2.7
% of Variance	29.92%	27.64%	13.97%
Cronbach's α	0.94	0.93	0.89

Note: ^a The question for FREQ_CONT is originally developed for the quality of communication, but is grouped into MF1_COMMITMENT. ^b The question for PE_CONFRESOL is originally developed for commitment, but is grouped into MF2_QUAL_COMM.

Table 3: Factor Analysis Results and Reliability Test Results (Continued)

Panel C: Component Matrixes of Strategic Performance

Economic Contribution

Variables	Factor 1
RELPERFORM	0.855
CONTRIBECON	0.841
ABSPERFORM	0.917
CONTRIBOTH	0.802

Description	Economic Contribution
Label	DF1 PERFORM
Eigenvalue	2.9
% of Variance	73%
Cronbach's α	0.88

Capacity Growth

Variables	Factor 1
CAPAINCR	0.834
LEARNING	0.917
KNOWLTRANS	0.92
INNOVATION	0.911

Description	Capacity Growth
Label	DF2 PERFORM
Eigenvalue	3.2
% of Variance	80%
Cronbach's α	0.92

Table 4: Bivariate Correlations

	Mean	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14
Antecedents	1. IF1_RESDEPEND	0	1.0													
	2. GEOPROXI	-74.6	70.5	-.047												
	3. SOCPOLSIMIL	.4	.2	-.050	.423**											
	4. IF2_COMPET	0	1.0	.000	-.028	.003										
	5. IF3_TRUST	0	1.0	.000	-.025	-.149	.000									
	6. IF4_INSTITUTION	0	1.0	.000	-.350**	-.119	.000	.000								
Mediators	7. MF1_COMMITMENT	0	1.0	-.127	-.184	-.111	.098	.724**	.259**							
	8. MF2_QUAL_COMM	0	1.0	.013	-.156	-.226*	-.187	.210*	.492**	.000						
	9. MF3_GROUPMEET	0	1.0	.254**	-.010	-.181	.062	.085	.136	.000	.000					
Outcomes	10. %ACHIEVED	59.5	27.5	-.036	-.254*	-.235*	.171	.162	.131	.265**	-.031	.028				
	11. EFFICIENT	13.1	43.0	-.048	-.017	-.112	-.003	-.028	-.182	-.057	.015	-.181	-.120			
	12. DF1_PERFORM	0	1.0	.204*	-.117	-.030	.074	.314**	.189	.255**	.251*	.268**	.240*	.079		
	13. DF2_PERFORM	0	1.0	.066	-.109	.019	.090	.353**	.290**	.292**	.294**	.242*	.193	.001	.781**	
Cont-rols	14. UNEMPLOY	2.6	1.1	.143	-.138	.122	.126	-.061	.151	-.064	-.078	.006	.081	.148	.214*	.132
	15. IMPORTANCE	.3	.5	-.083	.283**	.421**	.040	-.206*	-.019	-.256**	-.061	-.257**	-.284**	.010	.002	-.007

* and ** indicate that correlation is significant at the 0.05 and 0.01 level respectively (Pearson's 2-tailed).

Table 5: The Direct Effects on the Degree of Collaboration

The Degree of Collaboration							
	H1	Model 1 MF1_COMMITMENT		Model 2 MF2_QUAL_COMM		Model 3 MF3_GROUPMEET	
		Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
IF1_RESDEPEND	a (+)	-0.131	-2.080**	0.034	0.405	0.225	2.337**
GEOPROXI	b (+)	-0.105	-1.393	0.055	0.543	0.204	1.780*
SOCPOLSIMIL	c (+)	0.119	1.627 ^a	-0.186	-1.900*	-0.131	-1.179
IF2_COMPET	d (-)	0.105	1.683*	-0.172	-2.061**	0.069	0.730
IF3_TRUST	e (+)	0.711	11.188***	0.198	2.326**	0.021	0.220
IF4_INSTITUTION	f (+)	0.239	3.596***	0.511	5.741***	0.175	1.731*
UNEMPLOY		-0.037	-0.522	-0.133	-1.417	0.074	0.687
IMPORTANCE		-0.128	-1.695*	0.108	1.067	-0.261	-2.269**
R^2		0.645		0.363		0.176	
Adjusted R^2		0.614		0.308		0.105	
F-stat		21.081***		6.629***		2.485**	

* p<.10, ** p<.05, *** p<.01

^a. marginally significant at the .10 level (p=.107)

Table 6: The Mediating Effects of the Degree of Collaboration on the Performance of Collaboration

Panel A: Economic Contribution

	Dependent Variable: Economic Contribution (DF1_PERFORM)					
	Model 1		Model 2		Model 3	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
UNEMPLOY	0.242	2.318**	0.156	1.493	0.196	1.934
IMPORTANCE	-0.081	-0.776	0.032	0.288	0.111	0.996
IF1_RESDEPEND			0.184	1.96**	0.15	1.607
GEOPROXI			-0.047	-0.418	-0.092	-0.842
SOCPOLSIMIL			0.034	0.313	0.102	0.953
IF2_COMPET			0.052	0.562	0.06	0.668
IF3_TRUST			0.334	3.533***	0.017	0.104
IF4_INSTITUTION			0.154	1.556	-0.166	-1.191
MF1_COMMITMENT					0.334	1.893*
MF2_QUAL_COMM					0.369	2.812***
MF3_GROUPMEET					0.292	2.925***
ΔR^2			0.162		0.102	
F-stat for ΔR^2			2.189***		4.456***	
R^2	0.051		0.213		0.315	
Adjusted R^2	0.032		0.146		0.231	
F-stat	2.687*		3.153***		3.764***	

* p<.10, ** p<.05, ***p<.01

Note: At the bottom of the table, the change in R^2 between models (ΔR^2) assesses the additional explanatory power of a set of independent variables in Model 2 and a set of mediators in Model 3 respectively. All independent variables have tolerance values of greater than .20 and variance inflation factor (VIF) values of less than 4, indicating that multicollinearity is not a concern in the specified models.

Table 6: The Mediating Effects of the Degree of Collaboration on the Performance of Collaboration (Continued)

Panel B: Capacity Growth

Dependent Variable: Capacity Growth (DF2_PERFORM)						
	Model 1		Model 2		Model 3	
	Coeff.	t-stat	Coeff.	t-stat	Coeff.	t-stat
UNEMPLOY	0.152	1.436	0.068	0.661	0.09	0.889
IMPORTANCE	-0.06	-0.563	0.018	0.166	0.073	0.65
IF1_RESDEPEND			0.062	0.67	0.013	0.135
GEOPROXI			-0.04	-0.366	-0.093	-0.856
SOCPOLSIMIL			0.112	1.049	0.181	1.692*
IF2_COMPET			0.08	0.875	0.095	1.046
IF3_TRUST			0.376	4.055***	0.222	1.322
IF4_INSTITUTION			0.279	2.871***	0.063	0.453
MF1_COMMITMENT					0.134	0.759
MF2_QUAL_COMM					0.272	2.068**
MF3_GROUPMEET					0.256	2.557***
ΔR^2			0.22		0.072	
F-stat for ΔR^2			4.489***		3.132**	
R^2	0.02		0.24		0.312	
Adjusted R^2	0.001		0.175		0.228	
F-stat	1.034		3.680***		3.714***	

* p<.10, ** p<.05, ***p<.01