

Transaction Costs and Intergovernmental Cooperation: Application to Land Use

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Abstract

The US's highly decentralized system of government vests most land use decision making in the thousands of local units of government. This precludes the attainment of some of the benefits of joint regional land use decision making. There is growing belief that regional competitiveness and functionality require regional planning, strategies, and cooperation, particularly in the areas of land use and economic development. Assets and efforts such as green infrastructure development, regional transit, transportation, business development and attraction strategies, asset-based economic development, and regional growth management are perhaps better organized at higher levels than individual townships.

Much of literature on intergovernmental cooperation highlights the importance of transaction costs. However, very little attention has been devoted to land use cooperation and the role of transaction costs. The nature and dynamics of transaction costs impact on the potential to realize benefits from cooperation. In this paper, a framework for evaluating the implications of transaction costs for the effectiveness of inter-local land use partnerships is developed. A simple cost function model is used to explain the costs and challenges associated with managing coordinated, cooperative or consolidated relationships, and the dynamics of such costs. The analysis highlights the importance of such things as degree of complexity, inter-party diversity, and the relative sizes of collaborating partners. An application to Michigan suggests that policies to eliminate transaction costs help reduce the barriers to cooperation of various types.

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1. INTRODUCTION

One of the most highly debated issues in the area of regional science is the implication of intergovernmental coordination, cooperation, and consolidation (outright mergers) for the operating effectiveness of cooperating units (Tiebout 1956, Lowery 2000, Downs 1994, Rusk 1993).¹ Increasingly, communities are cooperating, and in some cases, consolidating their resources based on the perceived and expected short and long-term impacts on service delivery costs and on the benefits of cooperation. The potential that cooperation could reduce the fixed and operating costs of communities and therefore lead to lower costs of doing business has led many states to explore how state policy could be tweaked to support local communities and encourage intergovernmental cooperation. More states are now focusing on the benefits side, in recognition that cost reductions are only part of the whole picture. By capturing municipal service costs and enhancing services, the welfare of residents and businesses could be improved through cooperation.

Governments have the responsibility to finance, produce and distribute services to citizens as efficiently and effectively as possible. If there exist added benefits or economies of scale in the production of these services through joint production between government entities, when barriers do not exist, one would expect government units to cooperate. Municipal services are funded primarily through local property taxes. Because lower service costs would imply lower property taxes, reduced cost of living and, therefore, an enhanced quality of life, constituents can be expected to support cooperative efforts in the presence of economies of scale and other added benefits. Especially when budgets are tight due to a slowing economy,

municipalities are encouraged to explore ways to reduce their costs, due in part to pressures from constituents. Cooperation appears, on the surface, to be a promising tool to achieve such welfare goals.

Lower property taxes could also translate into a lower cost of doing business and, therefore, a more enabling business environment. The growing desire by communities and regions to attract new businesses and jobs has fueled interest in promoting regional cooperation as a strategy for creating a more competitive business environment. Moreover, many issues that are important to local communities transcend jurisdictional boundaries, and the action of one government unit impacts on the activities of others. Therefore, intergovernmental cooperation is at least relevant to the concept of regional competitiveness and to the regional business climate.

Direct evidence of the benefits of cooperation is, at best, spotty. Such evidence could enhance the motivation for cooperation. Despite the paucity of such evidence, many communities and policy makers view the economies of scale benefits of cooperation to be positive and therefore are seeking new ways to achieve joint action.

The ongoing debate across the United States about inter-local cooperation has been silent about transactions costs, despite significant treatment of these costs in economic and political literature (Coase 1960, Feiock 2004). To mitigate effects of opportunism, reduce uncertainty and ensure compliance, organizations must implement pre- and post-agreement oversight, which, in turn, generates transactions costs (Brown and Potoski 2003). Transaction cost analysis has traditionally been applied to firms and markets, but is also applicable to the analysis of contracting among governmental organizations (Brown and Potoski 2003). The broader concept of cooperation costs has also been introduced, especially in the literature on business cooperation (White 2005, White and Lui 2005).

Coase Theorem provides the basic framework for looking at the impact of transactions costs (Coase 1960). When transaction costs do not exist or are low, agents will cooperate to correct misallocations of public goods, thereby correcting for externalities. In reality, however, given the nature of cooperation and the structure of communities, it is postulated that transactions costs are not likely to be low due to problems of asset specificity, monitoring, risk, uncertainty, and imperfect information. Therefore, barriers may exist that prevent communities from choosing to cooperate even if such cooperation is mutually beneficial in the long run. The existence of excessive cooperation costs at the onset may provide a strong rationale for government intervention to help jurisdictions financially to overcome those costs if there is the potential to increase social welfare in the joint provision of services long-term.

It is important to understand the nature of transactions costs. Because humans are subject to bounded rationality, full information will typically be elusive, and all forms of contracting will be necessarily incomplete, making contracting inevitably subject to non-completion due to opportunistic behavior (Williamson 1981). This generates a pattern of transactions costs that are difficult to anticipate at the onset of pending cooperation. Transactions costs therefore include costs associated with discovery, planning, adapting and monitoring the completion of tasks under alternative governance structures that are not always clear to the actors (see Williamson 1981). Bounded rationality and uncertainty prevent economic agents from being able to fully predict the outcomes of contractual arrangements. Whether transactions costs are real or not, the perception of uncertainty about cooperation is a real barrier that must be overcome. The relative magnitudes of pre- and post-cooperation costs may also affect the potential for voluntary cooperation and determine the extent of incentives needed.

An appropriate starting point for guidance on the importance of transactions costs is the emerging literature on cooperation, strategic alliances and mergers and acquisitions. White (2005) and White et al. (2005) suggest that the transactions cost perspective has two limitations: (1) it does not recognize the benefits of alliances and (2) it expresses overly strong concern about issues of control and monitoring costs by focusing too much attention on opportunistic behavior. They argue that this approach does not allow adequate focus on the costs of cooperation, which are influenced by several relevant factors not addressed in transaction cost analysis. White and partners therefore suggest a more comprehensive approach that allows examination of factors such as joint task complexity, inter-partner diversity, strategic implications and equity. Their cooperation cost framework takes a broader perspective than traditional transaction cost analysis, and can be viewed as a framework that encompasses transactions costs.

In addressing cooperation costs and their implications for cooperation, it is important to recognize the additional complexity associated with the extent to which cooperation brings together non-homogeneous cultures. Henisz and Zelner (2004) examine cooperation between private and public entities and highlight the political and other risks inherent in such cooperation. The notion that elected officials have views that are not necessarily consistent with the views of their constituents (the agency problem) suggests huge differences in the cultures of the private and public sectors. Hence, cooperative efforts that involve greater privatization or private sector activities may increase cooperation costs, or at least greater apprehension about cooperation.

The complexity of cooperation costs, the degree of uncertainty about these, the potentially persistent nature of these costs over time, and the potential that some of these costs could be frontloaded suggest that the ability to achieve cost savings from cooperation may at least be curbed in the short run. In other words, the full benefits of joint action may not accrue

for a while, and the short-term impact of cooperation may be significantly modulated. Feiock argues that transactions costs can be reduced by altering institutional structures that affect inter-jurisdictional cooperation, but empirical evidence on this is not widely available (Feiock 2005). Furthermore, structural change is more likely to occur in the long run than in the short run. Therefore, there is need to understand the short and long-term dynamics of cooperation costs in evaluating the ability to reduce service provision costs through cooperation.

It is obvious from the above discussion that cooperation costs need to be addressed explicitly in analysis of the barriers to cooperation. It is also obvious that these costs need to be examined in the context of short and long run dimensions. This paper presents a simple theoretic model of municipal costs, analyzes the implications of cooperation or consolidation, and evaluates the dynamic nature of these costs over time. Cooperation costs are explicitly accounted for in defining a total cost function for communities that are cooperating. The potential obstacles to the realization of reduced municipal costs due to cooperation are highlighted in the context of the model. The model provides a framework for looking at various issues such as the benefits of alliances, degree of complexity, inter-party diversity, equity, and relative sizes of partners. A cursory application of the model to cooperation issues in Michigan suggests that attempts to reduce transaction costs impacts the likelihood of cooperation.

2. COST STRUCTURE OF LOCAL UNITS OF GOVERNMENT

The appropriate starting point for evaluating the implications of cooperation for the cost of service provision for communities is to explore the service provision costs for each community. When two communities combine, via cooperation or outright consolidation, each brings to the combined situation elements (if not all) of their existing independent costs, at least at the onset. This assertion is based on the expectation that barriers do exist that preclude

communities from instantly realizing reduced costs (assumes discovery and negotiation time before realization of benefits and great uncertainty due to incomplete information and other factors). For the purpose of simplification, we start by assuming zero cooperation costs.

Cost Structure without Cooperation Costs

Consider the case of m communities seeking to cooperate on a set of services. Denote the total cost of providing such services by the i^{th} community as SC_i where:

$$(1) \quad SC_i = \sum_j^n (P_j Q_j) .$$

In Equation (1), there are n services being provided by the i^{th} community, the cost per unit of the j^{th} of which is P_j and the service volume, which is easily proxied by the population to be served or the size of the tax base, is Q_j . In Equation (1), the total cost of service provision is the sum of the product of the unit cost of providing each service and the population of the served community.

Now, consider the choice by multiple communities to provide joint services through cooperation or outright consolidation. Denote the total joint cost for the combined communities as SC where:

$$(2) \quad SC = \sum_i^m SC_i = \sum_i^m \sum_j^n P_j^i Q_j^i .$$

To simplify the relationship depicted in Equation (2), we can start with the simple case of two communities without losing much in terms of the essence of the analysis. A more general case can easily be explored later. The total joint cost for two communities is depicted as follows:

$$(3) \quad SC = SC_1 + SC_2 = \sum_i^2 \sum_j^n P_j^i Q_j^i = \sum_j^n P_j^1 Q_j^1 + \sum_j^n P_j^2 Q_j^2 .$$

Equation (3) assumes that there are no transaction costs and eliminates any difficulty factor in the process of cooperation between communities.

To examine the dynamics of service costs over time (assuming no transaction costs), we explore the changes in Equation (3) in the form of elasticities. Denote the percentage change in a variable as ε where $\varepsilon_x = \delta \ln x = \delta x/x$. Hence, from Equation (3), we obtain:

$$(4) \quad \varepsilon(SC) = \varepsilon(SC_1 + SC_2) = \left(\frac{SC_1}{SC}\right)\varepsilon(SC_1) + \left(\frac{SC_2}{SC}\right)\varepsilon(SC_2)$$

$$= \left(\frac{SC_1}{SC}\right)\varepsilon\left(\sum_j^n P_j^1 Q_j^1\right) + \left(\frac{SC_2}{SC}\right)\varepsilon\left(\sum_j^n P_j^2 Q_j^2\right).$$

Note that $S_i = (SC_i/SC)$ is the share of the total initial joint budget that is attributable to the i^{th} community ($S_1 = SC_1/SC$ and $S_2 = SC_2/SC$). It therefore captures relative community size, bargaining power, budget equity, inter-party diversity, strategic implications, and other dominance related factors. Equation (4) can further be depicted as follows:

$$(5) \quad \varepsilon(SC) = S_1\varepsilon\left(\sum_j^n P_j^1 Q_j^1\right) + S_2\varepsilon\left(\sum_j^n P_j^2 Q_j^2\right)$$

$$= S_1 S_j^1 \left(\sum_j^n \varepsilon(P_j^1 Q_j^1)\right) + S_2 S_j^2 \left(\sum_j^n \varepsilon(P_j^2 Q_j^2)\right)$$

$$= S_1 S_j^1 \sum_j^n (\varepsilon P_j^1 + \varepsilon Q_j^1) + S_2 S_j^2 \sum_j^n (\varepsilon P_j^2 + \varepsilon Q_j^2).$$

Since εP_j^l and εQ_j^l are measures of the total or partial adjustability of unit service costs and service coverage, Equation (5) indicates that the adjustability of total post-collaboration, joint municipal costs is a function of the relative sizes of the collaborating communities, the relative sizes of the budgets for each service provided that is being coordinated, the adjustability (reducibility) of the costs of each service, and the adjustability of the scope and size of the serviced communities. As indicated above, the former relate directly to bargaining power, budget equity, inter-party diversity and strategic implications.

The analysis above can be put in a temporal context by looking at pre-collaboration activities, collaborative activities and post-collaboration activities. Recall that collaboration

costs are infinite from a temporal standpoint. Without going into the full range of transactions costs discussed above, and by focusing strictly on pre-collaborative activities, one observes that at the onset of collaborative ventures, even in the absence of collaborative activities and post-collaboration activities, there would exist discovery costs. Therefore, discovery costs represent the preliminary levels of collaborative costs, which must be overcome before a collaborative activity can realize the benefits of economies of scale. In other words, it takes some effort and time to discover the potential to realize economies of scale benefits/savings.

With the assumption of zero collaboration costs, it is also plausible to further assume that cooperation will not increase the costs of services for each of the communities. However, its potential to reduce total joint costs would be more limited in the short run than in the long run. If we assume the ϵP^1_j and ϵP^2_j vectors to be zero in the short run, and the ϵQ^1_j and ϵQ^2_j vectors to also be zero in the short run, then there would be no benefits to cooperation in the short run because of discovery costs. If however, we assume the ϵP^1_j and ϵP^2_j vectors to be less than zero in the long run (economies of scale accrue beyond the short run), and the ϵQ^1_j and ϵQ^2_j vectors to be zero in the long run (service area remains the same and the benefits accrue through cost savings), then there would be a cost saving in the long-run due to cooperation. The potential cost savings are obviously related largely to the ability to reduce the unit costs of specific services. More importantly, even without getting to the full range of cooperation costs, the discovery costs must be overcome first.

Obviously, for some services, there are opportunities for almost instant cost savings. Examples include services whose unit costs vary inversely with the size of the community serviced (e.g., insurance costs that vary with the size of the community covered, services that have huge fixed costs and lower variable costs, and services for which discounts are offered for

large volumes). Therefore, from Equation (5), it is apparent that short-term cost savings may be limited to the special category costs described above, while long-term cost savings arise mainly from long-term ability to focus on cost-reducing strategies that would allow municipalities to benefit from economies of scale.

The long-term ability to benefit from cooperation is therefore a function of the vision of the communities involved, the central role that cost reduction plays in their motivation, and the management and oversight infrastructure in place to achieve such cost reductions. Also, the short-term ability to benefit from cooperation depends on the nature of the areas of cooperation chosen by cooperating communities and the existing economies of scale benefits associated with such services. In communities that insist on keeping the functions of two merging communities the same and on maintaining duplication, obviously, total cost reduction would be slow to achieve. It is also important to note that short-term cost savings are not automatic.

The demonstration in equation (5) that when cost savings occur, their impact on joint costs is amplified when the relative size (share) of the community whose costs and service size is most adjustable is high, suggests the importance of the sizes of partnering entities and the sources of cost savings. Collaborating on services with significant cost savings could yield little benefit if the bulk of the saving is due to activities of a community with a small share of the joint initial cost. This relates, again, to the issues of bargaining power, budget equity, inter-party diversity and strategic implications. If the potential for reduced cost is higher when a dominant community also has huge potential for saving, then one is encouraged to wonder if there is incentive for a large community to partner with a smaller one. One motivation for such a partnership would be if the smaller community provides the source of innovation (push over the tipping point) for cost savings. In other words, if a small community can help a larger

community achieve savings by moving the combined entity to a new level of optimality, then there is incentive on both sides for cooperation, even though the momentum for cost savings arises from the size of the larger community.

Accounting for Cooperation Costs

Recall that cooperation costs include transaction costs. By definition, a transaction cost is a cost incurred in making an economic exchange or interaction. According to the literature, transaction costs include (1) search and information costs (which include the discovery cost component we have previously introduced), (2) negotiation or bargaining costs (pre-cooperation and thereafter), (3) policing and enforcement costs (mostly after the discovery stage), and (4) agency costs. On the basis of the work of White (2005) and White and Lui (2005), other cooperation costs include costs associated with (1) joint-task complexity, (2) achieving an equitable partnership, (3) realizing strategic net benefits from strategic liaison with others, and (4) realizing the net benefits of interparty diversity.

In the context of municipal cooperation, *discovery, search and information costs* are costs such as those incurred in determining what areas to collaborate in, the potential cost savings associated, and the cost associated with finding new vendors or contractors that would contribute to cost reductions. *Negotiation or bargaining costs* are the costs required to come to an acceptable agreement with the cooperating government, drawing up appropriate contracts, negotiating with associated unions and employees, and paying appropriate negotiators and lawyers. *Policing and enforcement costs* are the costs of making sure that the other party sticks to the terms of the contract, managing the process, and taking appropriate action if activities deviate from plan. *Agency costs* are costs associated with educating and notifying constituents,

negotiating with opponents, and shepherding collaborative ideas through the decision making process (Feiock 2002).

Within the framework of cooperation costs established by White (2005), costs associated with joint task complexity refer to the geographic, hierarchical, market or technological scope of interaction as well as the intensity, or depth of interaction between the parties. Interpartner diversity refers to the unique set of characteristics of each partner that may include things such as resources, capabilities, and formal and informal processes and cultures. Equity refers to ratio of benefits to costs of cooperation by each cooperating party. Strategic implications include the gains or losses incurred as a result of collaborations that link a cooperating party indirectly to other organizations as a result of the initial direct cooperative activities.

Cooperation costs are obviously quite relevant in the case of municipal cooperation. Oversight, coordination, management and integration have direct and indirect cost dimensions, as well as short and long-term dimensions. Due to bureaucracy and the highly political nature of local units of government, cooperation is likely to be very expensive, perhaps moreso than private sector cooperation. The literature on corporate mergers and acquisitions has further identified other types of transaction costs, including the costs associated with bringing together different cultures and styles of doing business (Adelaja, et al. 1999). In the next section, we account for these costs in evaluating the costs of collaborating communities.

Cost Structure with Cooperation Costs

Denote the transaction cost of a cooperating community as CC_i and the total cooperation costs of all cooperating communities combined by CC , where:

$$(6) \quad CC = \rho m SC = \rho m \left(\sum_i^m \sum_j^n P_j^i Q_j^i \right),$$

where SC is the combined initial cost of the partners (expected to be directly correlated with CC), m is the number of communities cooperating (also expected to be directly correlated with CC) and ρ is the difficulty adjustment factor (or a coefficient that translates complexity factors into cooperation costs). Obviously, ρ starts out larger than zero (due to the presence of discovery costs and other cooperation costs) and has the potential to reach zero over time. If in fact there is a learning curve, and collaborative activities become easier to achieve over time, then ρ would trend toward zero in the long run. The ability of CC_i to decline to zero is compromised by the m and SC difficulty factors, but declining values of ρ mitigate such compromise.

Equation (6) can be transformed as follows assuming constant ρ and m :

$$\begin{aligned}
(7) \quad \varepsilon(CC) &= \rho m \left(\varepsilon \left(\sum_i^m \sum_j^n P_j^i Q_j^i \right) \right) \\
&= \rho m \left(S_1 \varepsilon \left(\sum_j^n P_j^1 Q_j^1 \right) + S_2 \varepsilon \left(\sum_j^n P_j^2 Q_j^2 \right) \right) \\
&= \rho m \left(S_1 S_j^1 \sum_j^n (\varepsilon P_j^1 + \varepsilon Q_j^1) + S_2 S_j^2 \sum_j^n (\varepsilon P_j^2 + \varepsilon Q_j^2) \right).
\end{aligned}$$

Assuming however, that ρ and m are not constant, then:

$$\begin{aligned}
(8) \quad \varepsilon(CC) &= \varepsilon \rho + \varepsilon m + \left(\varepsilon \left(\sum_i^m \sum_j^n P_j^i Q_j^i \right) \right) \\
&= \varepsilon \rho + \varepsilon m + \left(S_1 \varepsilon \left(\sum_j^n P_j^1 Q_j^1 \right) + S_2 \varepsilon \left(\sum_j^n P_j^2 Q_j^2 \right) \right) \\
&= \varepsilon \rho + \varepsilon m + \left(S_1 S_j^1 \sum_j^n (\varepsilon P_j^1 + \varepsilon Q_j^1) + S_2 S_j^2 \sum_j^n (\varepsilon P_j^2 + \varepsilon Q_j^2) \right).
\end{aligned}$$

Adjusting Equations (5) by accounting for Equations (7) and (8), one obtains the following:

$$\begin{aligned}
(9) \quad \varepsilon(SC) &= S_1 S_j^1 \sum_j^n (\varepsilon P_j^1 + \varepsilon Q_j^1) + S_2 S_j^2 \sum_j^n (\varepsilon P_j^2 + \varepsilon Q_j^2) \\
&\quad + \rho m \left(S_1 S_j^1 \sum_j^n (\varepsilon P_j^1 + \varepsilon Q_j^1) + S_2 S_j^2 \sum_j^n (\varepsilon P_j^2 + \varepsilon Q_j^2) \right) \\
&= (1 + \rho m) \left(S_1 S_j^1 \sum_j^n (\varepsilon P_j^1 + \varepsilon Q_j^1) + S_2 S_j^2 \sum_j^n (\varepsilon P_j^2 + \varepsilon Q_j^2) \right)
\end{aligned}$$

$$\begin{aligned}
(10) \quad \varepsilon(SC) &= S_1 S_j^1 \sum_j^n (\varepsilon P_j^1 + \varepsilon Q_j^1) + S_2 S_j^2 \sum_j^n (\varepsilon P_j^2 + \varepsilon Q_j^2) \\
&+ \varepsilon \rho + \varepsilon m + \left(S_1 S_j^1 \sum_j^n (\varepsilon P_j^1 + \varepsilon Q_j^1) + S_2 S_j^2 \sum_j^n (\varepsilon P_j^2 + \varepsilon Q_j^2) \right) \\
&= \varepsilon \rho + \varepsilon m + 2 \left(S_1 S_j^1 \sum_j^n (\varepsilon P_j^1 + \varepsilon Q_j^1) + S_2 S_j^2 \sum_j^n (\varepsilon P_j^2 + \varepsilon Q_j^2) \right).
\end{aligned}$$

Both Equations (9) and (10) suggest that the benefits of cooperation depend on the relative sizes and service areas of collaborating communities, the potential to reduce costs in the short and long run, and the number of cooperating communities. They also suggest the importance of understanding the dynamics of specific elements of cooperation costs over time. From (9) and (10), the adjustability of joint municipal cost is a function of these factors, the adjustability of the sizes of the serviced communities, as well as the ability to achieve specific cost reductions. As shown in these equations, strategies to reduce transaction costs must focus on the role of ρ , which is the reducible element of transaction costs over time. Obviously, ρ starts out being positive, could eventually become zero in the long run and possibly could even be negative. The fact that ρ , and therefore CC , are positive, at least for a while, highlight the challenges that communities may have to face as they pursue economies of scale benefits through cooperation. It also provides a framework for looking at the need for government intervention to reduce the barriers to cooperation, if indeed cooperation maximizes overall social welfare.

3. IMPLICATIONS

Past studies have focused extensively on such issues as barriers to cooperation, information needs to encourage cooperation, necessary enforcements to ensure effective cooperation, the nature of inter-local bargaining activities, the economies of scale benefits of collaboration, positive and negative externalities of collaboration, agency problems and implications of leadership for cost reductions, and a host of other issues. This analysis

introduces another dimension by developing a framework for looking at the costs for cooperating communities that integrates all these concepts into a conceptual economic model. One conclusion is that even when unit costs of providing services and the population of the served community are adjustable over time (increasing the likelihood of cost saving), these are subject to relative community shares as well as the relative contribution of a service whose cost is reducible to the total budget of the joint activity. This suggests that the ability to realize joint cost saving depends on which community is responsible for the accrual of such savings. Given this finding, one is encouraged to be skeptical about the notion that a large community with significant potential for cost saving will partner to achieve such saving in the first place, considering the fact that collaboration would add very little. The analysis suggests that more equal entities are more likely to partner than unequal entities, unless there is potential for a small entity to push a larger entity beyond a tipping point for cost savings. Of course the services have to be appropriate and conducive. It is important to note that the extent to which collaboration will encourage cost saving depends on how much the cooperating process drives communities toward searching for joint cost savings. That is, assuming little benefits in the short run, long run benefits are enhanced when there are strong motivations to achieve cost savings via the collaboration process.

State policies that target ρ or the P_j s by encouraging the reduction of cooperation costs or the discovery of specific service cost savings could be very helpful. For example, State government can pass legislation to reward bodies creating joint plans for economic growth, long-term land use, transportation, etc. An example of state intervention in creating intergovernmental cooperation is State Statute 66.0316 passed by the State of Wisconsin which requires that beginning in January 2003, all local governments within Metropolitan Statistical

Areas (MSA's) must sign at least two compacts with neighboring municipalities or counties for provision of joint services. Additionally, the Budget Repair Bill of 2002 earmarked \$45 million in 2004 Local Shared Revenues to reimburse local governments demonstrating cost savings in 2003 from consolidating such services. Incentives, obviously, help to modulate the adverse effects of cooperation costs. If structured well, such incentives could also directly reduce service costs if they encouraged faster and better discovery of opportunities for cost reduction.

The fundamental contribution of this paper is its theoretical definition of collaboration costs, pre and post-collaboration costs, pre and post-collaboration service costs, and the treatment of the dynamics of these costs over time. By so doing, the formidable role of collaboration costs and the need to overcome these are further highlighted. One implication is that states that are currently pushing for inter-local cooperation clearly evaluate the potential for such activities to yield benefits before pushing those activities. Another is the need to consider incentives to foster collaboration.

4. EMPIRICAL APPLICATION TO LAND USE COOPERATION IN MICHIGAN

The model above, illustrating the cost structures of local units of government, is overly simplistic, particularly as it was silent about the benefits of cooperation. However, it provides some useful insights as to the nature of transaction costs and the types of factors that impact on such transaction costs. The model and previous discussion highlight the sources of transaction costs. To the extent to which such costs are real and palpable, their relative magnitudes should be reflected in the probability that communities will cooperate across jurisdictions. The model above also sets the stage for a preliminary assessment of the impacts of transaction costs on the probability of cooperation.

In this paper, we concentrate on land use cooperation across municipalities in generating preliminary evidence of the impact of attempts to reduce transaction costs on cooperation. We particularly focus on the following questions: 1) whether or not a community has partnered with another community in developing a master plan (MP); 2) whether or not a community has entered into a joint municipal planning agreement with another community (MPA); 3) whether or not a community has been involved in some other cooperative land use plan or regulation (OC); 4) the total number of other communities the community is partnering with (NUM); and 5) the number of years a community has been cooperating with others on land use planning and regulation efforts (TIME).

To operationalize an empirical study on cooperation in land use planning and regulation, a survey was conducted by the Land Information Access Association (LIAA) in cooperation with the Land Policy Institute (LPI) at Michigan State University, the Michigan Municipal League (MML), and the Michigan Townships Association (MTA). The survey was sent to all 1,759 local units of government in Michigan, and received 658 responses (37 percent). The survey was sent to township supervisors, city and village manager and mayors. The survey included questions of the items listed above in addition to information on the community, how it runs its land use planning activities, possible reductions to transaction costs, as well as opinions on cooperation.

Information was collected on each community is population (POP); if the community reimburses planning commissioners for training and educational activities (REIM); if the community does reimburse, how much is reimbursed per meeting (REIM\$); the number of full time staff hours devoted to land use planning and regulation per year (STAFF); if planning staff member perform other jobs beyond land use planning and regulation (OTHER); if the

community outsources for any planning activities (OUTS); the percentage of planning budget outsourced (OUTS%); total budget of the community (TOT\$); if the community generates grants to support planning and land use regulation activities (GRANTS); if the history of past disputes with neighboring jurisdictions was not important, somewhat important, important or very important in fueling collaborative efforts, according to the respondent (HIST); if the lack of local leadership has been a deterrent to joint planning and regulatory efforts was not important, somewhat important, important or very important in fueling collaborative efforts, according to the respondent (LEAD); if the municipality receive funding or other technical assistance to jumpstart cooperative efforts (FTA); the importance of local public interest in supporting cooperation, according to the respondent (INTR); whether or not the official has a positive opinion about the value and appropriateness of cooperation in land use planning and regulation (POSI); whether or not the official has a neutral opinion about the value and appropriateness of cooperation in land use planning and regulation (NEUT); whether or not the official has a negative opinion about the value and appropriateness of cooperation in land use planning and regulation (NEGA); and population density (POPD). The responses to each of the five initial (dependent variable) questions were then regressed against the remaining (independent variable) questions to determine which factors affect cooperation and the intensity of such cooperation. Since the first three dependent variables were binary, logit regressions were used in the analysis. Ordinary Least Squares (OLS) was used in the regression of the other two models since the dependent variables were scalar in nature.

Parameter estimates of the regressions are reported in Table 4-1. The results from models which corrected for heteroskedasticity are reported in Table 4-2. It is important to remember that POP is a proxy for the size of the community, while POPD is a proxy for joint

task complexity. REIM, REIM\$, GRANTS and FTA are proxies for incentives and attempts to reduce transaction costs. STAFF, OTHER, OUTS, OUTS\$, and TOT\$ are proxies for the scope and structure of the planning unit of the community. All other variables are proxies for the climate and history of cooperation in the community.

We begin first with MP, the joint development of a master plan. Table 4-1 reveals the statistical significance of POP (-0.0001), FTA (1.3081), OUTS% (0.0121) and OTHER (0.6701), as well as the constant variable (CONS, -3.5213). POP and the constant have negative coefficients, while the remainder are positive. The positive coefficients indicate that attempts to eliminate some of the initial barriers to cooperation pay off in spurring collaborative activities. The results also indicate that the more communities outsource their planning activities, the more likely they are to cooperate with others. This may be due to the fact that open mindedness about outsourcing connotes open mindedness about cooperation. The results further indicate that communities with planning departments that are integrated into other municipality activities are more likely to cooperate. This affair suggests that communities that are already open to it through their structure are more ready to cooperate. As shown in Table 4-2, FTA, all variables remain statistically significant and have the same directional effect in the model corrected for heteroskedasticity.

Examine next MPA, the implementation of joint municipal planning agreements. Table 4-1 reveals the statistical significance of OTHER (-0.8214), HIST (0.3867), FTA (1.4325) and NEUT (1.3515), and the CONS (-5.5125) with OTHER and the constant having a negative estimated coefficient and the remaining estimated coefficients being positive. These results indicate that communities with planning departments that are integrated into other municipal activities are less likely to sign joint municipal planning agreements with others. The results also

indicate that past disputes with neighboring jurisdictions (as indicated by the respondent) encourage joint planning agreement. In other words, the more important the respondent felt past disputes were barriers to cooperation, the more likely the community was to sign joint planning agreements. Also, as with the previous estimation, attempts to eliminate some of the initial barriers to cooperation increase the likelihood of cooperation, as does a neutral opinion on the value and appropriateness of intergovernmental cooperation in land use planning and regulation. As shown in Table 4-2, the same variables were again significant in the model corrected for heteroskedasticity.

When estimating the effect on OC, whether the community has some other cooperative land use plan or regulation or not, it can be seen (in Table 4-1) that REIM (-0.6453) and HIST (-0.1929) both have a negative, and statistically significant. In other words, a municipality that does reimburse for training and educational activities is less likely to cooperate in ways other than developing a master plan or a joint municipal planning agreement. The more importance placed on a history of past disputes with neighboring jurisdictions, the less likely the community is to cooperate with others on some other cooperative land use plan or regulation. It can also be seen that FTA (0.7115), POSI (0.9011) and NEGA (1.0036) all have positive and statistically significant effects on some other cooperative land use plan or agreement. This indicates that as with the previous two estimations, attempts to eliminate some of the initial barriers to cooperation, such as through receiving funding or technical assistance, increases the likelihood of cooperation. The results also indicate that a positive or a negative opinion about the value and appropriateness of intergovernmental cooperation in land use planning and regulation activities increase the likelihood that a community cooperates in some other form of cooperative land use

plan or regulation. Table 4-2 shows that REIM, HIST, FTA, POSI, NEGA and CONTS are all still statistically significant when correcting for heteroskedasticity.

Next, estimation of NUM, the total number of municipalities a community is in cooperation with, shows that POP (0.0000), STAFF (0.0001), OTHER (0.3912), FTA (1.4329) and POSI (0.9285) are positive and statistically significant, while POPD (-0.0002) is negatively related and statistically significant. This means that as the population of a municipality increases, they are more likely to cooperate with more municipalities, but as the populations density increases, the municipality is less likely to cooperate with more municipalities (or more likely to cooperate with fewer municipalities). As staffing hours increase and /or planning staff perform other jobs duties as well, the community has a greater likelihood of cooperating with a larger number of other communities. Communities that receive funding or technical assistance to help start cooperative planning efforts are also more likely to cooperate with a greater number of other communities. The official responding having a positive opinion of the value and appropriateness of cooperation on land use planning and regulation also increases the likelihood a community will cooperate with a greater number of other communities. Other than STAFF, the same variables are significant when the estimation is run correcting for heteroskedasticity (Table 4-2).

Finally, we examine TIME, the number of years a community has been cooperating with another / others. As can be seen in Table 4-2, only POP (0.0001), POSI (2.5897) and the constant (CONST, 5.4946) are statistically significant, and all are positively related. This indicates that length of cooperation time is directly related to a municipalities population. That is, large towns are likely to have been in cooperation longer. It also indicates that the officials positive opinion of the value and appropriateness of cooperation is positively related to the

length of cooperation time. As with many of the other estimations, the regression corrected for heteroskedasticity (Table 4-2) has the same variables statistically significant, the same in direction and similar in magnitude as the uncorrected regression.

The first four regressions (MO, MPA, OC and NUM) all have FTA as being a positive and statistically significant variable, even when the model is corrected for heteroskedasticity. The only time FTA is not statistically significant is when determining the effect on the number of years a community has cooperated with another. The strong showing of FTA, a proxy for incentives to cooperate and a sign of efforts to reduce transaction costs, indicates that as transaction costs are reduced, municipalities are more likely to cooperate with each other on land use planning and regulation activities, and that they are more likely to cooperate with a greater number of other municipalities. A positive opinion (by the official responding) of the value and appropriateness of intergovernmental cooperation on land use planning and regulation activities (POSI) has a statistically significant, and positive, effect on communities cooperating in other ways (OC), the number of municipalities involved in the cooperation (NUM) and the length of cooperation (TIME). Having planning staff members that perform other job duties (OTHER) increases the likelihood that a municipality will develop a master plan with another municipality, as well as increase the likelihood of cooperating with a larger number of municipalities, but it decreases the likelihood of a joint municipal planning agreement. However, the fact that planning staff perform other job duties may be a result, not a cause of, cooperative efforts and the need for less man-hours to be devoted to individual planning and regulation efforts.

Transaction costs appear to play a key role in stifling in intergovernmental cooperation efforts. The large coefficients of FTA, and POSI for the equations listed, relative to the other variables coefficients, indicates that cooperation between municipalities, including the size and

duration of that cooperation, are most heavily influenced by a reduction in barriers to cooperation, which include financial and technical incentives and a positive opinion on the value or cooperation. Multi-tasking planning staff (OTHER) may effect cooperation, particularly the number of municipalities involved, or be a result of the cooperative activities and the communities experiencing economies of scale. As can be seen from the Michigan case study, reductions to the barriers of intergovernmental cooperation, particularly transaction costs, can increase the likelihood of cooperative activities. Reducing the transaction costs can also increase the number of those involved and the length of the cooperative arrangements.

Table 4-1. Regression Estimates, t-Values and Significances

	MP Logit		MPA Logit		OC Logit		NUM		TIME	
	Coef	P> t	Coef	P> t	Coef	P> t	Coef	P> t	Coef	P> t
POP	-0.0001	0.097	-0.0000	0.855	0.0000	0.245	0.0000	0.006	0.0001	0.057
REIM	0.2412	0.670	0.1677	0.798	-0.6453	0.069	-0.1465	0.641	-1.2839	0.380
REIM\$	0.0088	0.193	0.0047	0.546	-0.0033	0.506	0.0053	0.202	0.0315	0.107
STAFF	0.0001	0.617	0.0001	0.619	0.0001	0.318	0.0001	0.018	0.0003	0.488
OTHER	0.6701	0.065	-0.8214	0.058	0.1482	0.561	0.3912	0.075	-0.3282	0.748
OUTS	0.1240	0.780	0.7611	0.135	0.1174	0.700	0.1031	0.695	-0.6046	0.621
OUTS%	0.0121	0.092	-0.0087	0.358	-0.0018	0.749	0.0048	0.335	-0.0168	0.469
TOT\$	-0.0000	0.508	-0.0000	0.513	0.0000	0.708	0.0000	0.674	-0.0000	0.160
GRANTS	-0.7693	0.257	0.1651	0.778	0.2695	0.520	-0.3594	0.340	0.7201	0.679
HIST	-0.0860	0.588	0.3867	0.054	-0.1929	0.091	-0.0027	0.978	0.0788	0.862
LEAD	0.0806	0.664	0.1538	0.502	-0.0696	0.587	-0.0202	0.857	-0.2409	0.642
FTA	1.3082	0.001	1.4325	0.001	0.7115	0.030	1.4329	0.000	0.6060	0.656
INTR	0.1902	0.441	0.3010	0.306	0.0964	0.580	0.1641	0.271	0.3859	0.574
POSI	0.2248	0.564	0.4167	0.391	0.9011	0.002	0.9085	0.000	2.5897	0.022
NEUT	-0.1539	0.794	1.3515	0.020	0.5454	0.180	0.1189	0.725	0.2835	0.857
NEGA	-0.7480	0.278	-1.3375	0.225	1.0036	0.010	0.2546	0.449	0.9938	0.525
POPD	0.0001	0.379	-0.0002	0.549	-0.0000	0.869	-0.0002	0.068	0.0004	0.453
CONST	-3.5214	0.001	-5.5125	0.000	-0.7679	0.269	0.3118	0.607	5.4946	0.048
R²/ Pseudo R²	0.0814		0.1687		0.0810		0.2643		0.0534	
Adj R²							0.2274		0.0070	

Table 4-2. Regression Estimates, Corrected for Heteroskedasticity.

	MP Logit		MPA Logit		OC Logit		NUM		TIME	
	Coef	P> t	Coef	P> t	Coef	P> t	Coef	P> t	Coef	P> t
POP	-0.0001	0.058	-0.0000	0.782	0.0000	0.281	0.0000	0.036	0.0001	0.067
REIM	0.2412	0.655	0.1677	0.801	-0.6453	0.061	-0.1465	0.604	-1.2839	0.408
REIM\$	0.0089	0.219	0.0047	0.528	-0.0033	0.487	0.0053	0.196	0.0315	0.133
STAFF	0.0001	0.754	0.0001	0.603	0.0001	0.401	0.0001	0.200	0.0003	0.530
OTHER	0.6701	0.073	-0.8214	0.046	0.1482	0.561	0.3912	0.099	-0.3282	0.745
OUTS	0.1240	0.782	0.7611	0.154	0.1174	0.701	0.1031	0.687	-0.6046	0.606
OUTS%	0.0121	0.074	-0.0087	0.326	-0.0018	0.758	0.0048	0.441	-0.0168	0.429
TOT\$	-0.0000	0.473	-0.0000	0.234	0.0000	0.709	0.0000	0.709	-0.0000	0.105
GRANTS	-0.7693	0.285	0.1651	0.769	0.2695	0.523	-0.3594	0.355	0.7201	0.654
HIST	-0.0860	0.591	0.3867	0.058	-0.1929	0.082	-0.0027	0.974	0.0788	0.854
LEAD	0.0806	0.690	0.1538	0.546	-0.0696	0.581	-0.0202	0.840	-0.2409	0.617
FTA	1.3082	0.001	1.4325	0.001	0.7115	0.038	1.4329	0.000	0.6060	0.627
INTR	0.1902	0.473	0.3010	0.344	0.0964	0.590	0.1641	0.215	0.3859	0.543
POSI	0.2248	0.590	0.4167	0.405	0.9011	0.002	0.9085	0.000	2.5897	0.027
NEUT	-0.1539	0.795	1.3515	0.020	0.5454	0.153	0.1189	0.649	0.2835	0.860
NEGA	-0.7480	0.282	-1.3375	0.200	1.0036	0.010	0.2546	0.361	0.9938	0.476
POPD	0.0001	0.326	-0.0002	0.481	-0.0000	0.867	-0.0002	0.044	0.0004	0.404
CONST	-3.5214	0.002	-5.5125	0.000	-0.7679	0.283	0.3118	0.534	5.4946	0.036
R²/ Pseudo R²	0.1168		0.1687		0.0810		0.2643		0.0534	

Endnotes

¹ Coordination is defined simply as two communities exchanging information and keeping each other informed about activities of mutual interest. Cooperation is a higher level of interaction, and could involve the joint provision of services by two or more communities. Cooperation could take the form of the less frequently observed, but more formal means of cooperation such as consolidation (outright merger). Consolidation is considered to be special or extreme case of cooperation.

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