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Sustainability Synergies or Silos? The Opportunity Costs of Local Government Organizational Capabilities

Symposium Article

Abstract: *Public managers serve many sovereigns, work within fiscal constraints, and face competing demands for finite resources. This article applies a strategic management lens to local government sustainability capabilities to examine the conditions under which local governments diversify into new areas of service delivery and when they do not. Building on recent efforts to apply resource-based theories to the public sector, the authors distinguish between more and less fungible capabilities and posit that local government officials make such commitments to enhance the competitiveness of their communities. Two surveys of U.S. cities provide evidence that governments that rely on tax incentive-based development approaches may struggle to make sustainable development gains. Such cities are more likely to devote resources disproportionately to delivering benefits to firms at the risk of incurring increasing opportunity costs over time. Prior commitments to traditional, firm-based economic development capabilities appear to inhibit their ability to pursue broader sustainability policies. However, economic development strategic planning can also positively influence some investments in greenhouse gas reduction efforts. Moreover, cities facing more competition for development are more likely to integrate planning and performance measurement to assess their sustainability commitments.*

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Evidence for Practice

- Local governments can make sustainability gains by identifying fungible organizational capabilities that can be more easily reassigned to similar functions.
- Strategic planning that involves both economic development and sustainability efforts can identify more avenues for leveraging existing capabilities.
- Cities located in more competitive markets for economic development should devote greater attention to performance measurement and management to justify investing resources in sustainable development efforts.
- Overreliance on tax-incentive-based economic development strategies, which often drain communities of resources, can impair broader commitments to sustainable development.

By delegation or default, local governments have become a front line for many of today's most pressing societal challenges, from infrastructure upkeep and community development to climate change mitigation and adaptation (Bai et al. 2018; Fiorino 2010; Yi et al. 2018). Local government managers serve many sovereigns, work within fiscal constraints, and face competing demands for finite resources (Wildavsky 1997). Wittingly or not, public managers forgo potentially beneficial opportunities when they make resource allocation decisions (Elston and Bevan 2019). This is the gist of strategic management, a process that spotlights the risky business of such resource allocations. A growing literature on local governance has considered *why* cities are becoming more engaged in sustainability-related issues, linking these choices to prestige, federal inaction, electoral and community co-benefits (Bodini, Bondavalli, and Allesina 2012; Krause 2011; Mazmanian and Kraft 2009; Svara, Watt, and Jang 2013; Swann and Deslatte 2018). However, the strategies for *how* governments reallocate resources to carry out these policies is less understood (Deslatte and Swann 2019; Hughes 2019).

This article applies a strategic management lens to local government sustainability activities and posits that policy makers and managers make such risk calculations to distinguish their organizations and enhance the appeal and competitiveness of their communities to potential residents or firms (Audretsch 2015; Besanko et al. 2009; Schneider 1989). Normatively, sustainability emphasizes balancing the ecological, economic, and social equity impacts of policies and actions. Practically, it can entail a sizable commitment of time, energy, and financial resources (Deslatte and Swann 2017). Sustainability has also taken on a more

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pronounced role in guiding the development goals and strategies of cities in recent years (Portney 2013a). As a result, these efforts entail implicit and explicit opportunity costs. How public managers consider such costs when they make diversification decisions, enter new areas of service delivery, and invest in new capabilities is relatively unexamined in either the local government context (Dimitrijevska-Markoski and French 2019) or the sustainability arena (Deslatte 2020; Deslatte and Swann 2019; Poister and Streib 2005).

One way the private sector strategic management literature has considered this question is by first distinguishing "scale-free" from "non-scale-free" capabilities (Levinthal and Wu 2010). A firm's "scale-free" capabilities (e.g., brand names or computer operating systems) may allow it to easily enter new markets, because the capability is essentially noncongestible, and their use in one area does not preclude their use elsewhere. Non-scale-free capabilities (e.g., a physical plant or technical training of employees) present economies of scale or scope and come with either fixed (unvarying despite the volume of output) or sunk (unavoidable and already spent) costs (Besanko et al. 2009). Like firms, public organizations possess mostly non-scale-free capabilities characterized by opportunity costs. Thus, managers tasked with implementing sustainability initiatives face a fundamental choice: stretch resources or reallocate them. On the one hand, they can attempt to leverage their core capabilities to create synergies. Economic development, as an example, requires long-term strategic planning and management, ongoing stakeholder engagement, financial instruments and tax incentives to entice firms, and systems for monitoring performance and enforcing agreements (Leigh and Blakely 2016). Some of these capabilities (e.g., strategic planning systems, performance measurement, auditing personnel) may be more suitable to being repurposed or used in tandem for broader organizational goals (Deslatte and Stokan 2017; Fiorino 2010; Hawkins et al. 2016).

On the other hand, managers may choose to diversify investments by diverting resources away from more traditional development pursuits, leading to siloed—but more specialized—capabilities (Bryson, Ackermann, and Eden 2007). For decades, cities have devoted financial resources to luring firms with tax incentives, capability commitments that are difficult to redirect. However, investment in government operations or community-based greenhouse gas (GHG) reduction efforts may also reflect high-risk exploratory strategies, because they require specialized training, outside technical assistance, and significant time (Krause, Yi, and Feiock 2016; Yi, Krause, and Feiock 2017). The opportunity costs of reallocating resources to GHG mitigation or adaptation efforts should equate with the value of the most appealing alternative use of those resources (Besanko et al. 2009).

Building from recent work applying resource-based theories to the public sector (Andrews, Beynon, and McDermott 2016; Bryson, Ackermann, and Eden 2007), this article adapts a model of non-scale-free capabilities to help explain the conditions under which local governments diversify into new areas of service delivery and when they do not. We ask, when do cities leverage highly fungible capabilities to achieve sustainability goals? Secondarily, what factors prompt them to create silos by diversifying into new capability commitments? Analyzing U.S. local government survey data, we find that cities that rely on tax-incentive-based development approaches may struggle to achieve a broader integration of sustainability and economic development activities. Such cities are more likely to devote their resources disproportionately to delivering benefits to firms and incur increasing opportunity costs over time. In other words, prior commitments to traditional firm-based economic development appear to inhibit their ability to pursue broader sustainability policies.

However, the analysis finds evidence that economic development strategic planning can positively influence some investments in GHG reduction efforts. Moreover, perceptions of competition for economic development positively mediate the relationship between the strategies governments develop to pursue sustainable economic development and the performance information they collect. This suggests that economic competition between cities in metropolitan regions strengthens commitments to performance measurement (Deslatte and Stokan 2017; Hawkins 2014; Teske et al. 1993). Cities utilize sustainability investments to distinguish themselves from competitors; measuring the impact of these investments facilitates branding and helps justify the efforts to stakeholders. The overriding conclusion is that economic competition places a greater premium on demonstrating benefits associated with sustainability, and thus it may lead to greater use of performance information for resource allocation decisions.

Public Organizational Capabilities and Their Opportunity Costs

At some level, all organizations distinguish between the types of resources they possess and the management routines, processes, or practices needed to maximize their productive use. Consider a city planning department. The office may employ land-use planners with expertise in geographic information systems (GIS). Some may be trained in transportation planning, others in economic analysis. A senior planner may also have experience with writing grants, conducting community outreach, development and implementation of community and regional plans, or drafting zoning ordinances. These abilities, technologies, and experiences describe the *competencies* of the organization. Competencies can be defined as a subset of all resources, including human talent, skills, knowledge, technologies, and social capital (Bryson, Ackermann, and Eden 2007; Harvey et al. 2010). If the planning department is tasked with increasing the number of proposed zoning changes it reviews, this draws on its underutilized *capacity*, which is the aggregate amount of resource devoted to a specific competency. When the department spreads the fixed costs of personnel over increasing output, it reduces the average costs of what it is producing, until it runs into limits on its capacity.

However, if the department is asked to develop a sustainability action plan, encompassing smart growth, green infrastructure, energy conservation, or social equity principles, this may or may not be a *capability* it possesses (because of a lack of task-specific competencies, a dearth of excess capacity, or both). Capabilities are a joint function of competencies and capacity and reflect "high level organizational practices used to coordinate the productive activities of the firm" (Andrews, Beynon, and McDermott 2016, 239). While sometimes used interchangeably in the public administration literature, these terms highlight two traits: (1) they distinguish

between natural, material, and fiscal resources and human-based know-how, leadership, learning, and codification of experience and expertise into organizational routines; and (2) they recognize that some of these human resources are more useful than others for adapting organizations to take advantage of opportunities.

In the previous example, the city may incur greater opportunity costs by taking on sustainability planning if it lacks capacity (because planners are overworked) or its departmental competencies are ill suited to the task. Ideally, the city's leadership would try to weigh these opportunity costs and decide how, where, or whether to reallocate resources to developing such capabilities. This is further complicated in the public sector by competing values of efficiency, accountability, effectiveness, equity, and so forth. While private sector managers can focus on the financial bottom line, public sector counterparts must weigh trade-offs between transparency, efficiency, effectiveness, and legitimacy (Allison 1980; Elston and Bevan 2019; Hammer and Pivo 2017). Government officials must be acutely aware that as resources ill suited to a particular goal are consumed, there are varied opportunity costs accruing for their most attractive and forgone alternatives (Elston and Bevan 2019).

These types of risk-based choices highlight why many public administration scholars have called for the further development of a resource-based theory of public organizational capabilities (Andrews, Beynon, and McDermott 2016; Harvey et al. 2010; Piening 2013), akin to the private sector strategic management literature (Schreyögg and Kliesch-Eberl 2007). Opportunity costs matter, because public managers are trained and/or indoctrinated to be risk averse when weighing whether to innovate, be proactive, and potentially stovepipe resources into new programs or activities (Bozeman and Kingsley 1998; Moon 1999; Morris and Jones 1999). Trade-offs inevitably occur, whether they are calculated or not.

Organizational Synergies: Leveraging Core Competencies

A presumption within public administration research is that organizational resources can be redirected, as managers adapt existing operations, efforts, energy, and resources to new goals and activities (Frederickson 1996; Kearney and Meynhardt 2016; O'Toole and Meier 1999). However, the nature of some highly specific resource commitments makes them less conducive to adaptation. Levinthal and Wu (2010) argue that distinguishing between scale-free and non-scale-free capabilities is an important means for understanding organizational strategies. Scale-free capabilities such as patents or computer operating systems have low or no opportunity costs, because using them in one context does not diminish the ability of others to do the same in some other arena or activity. Most organizational capabilities, however, are non-scale-free and are congestible once committed. Most of the knowledge-based capabilities local governments have at their disposal—managerial time, experience, specialization—fall into this category. But they also fall along a spectrum of fungibility.

Investments in highly fungible capabilities create "synergies" through the combination or coordination of similar competencies. This is because highly fungible capabilities are essentially equivalent in use wherever committed. Local government finance officers tasked with business process improvement are expected to be competent whether they are reviewing the books in the public works or the parks and recreation department. Conversely, capabilities with low-fungibility are more specialized to specific routines. Professional networks developed between economic development professionals and business and civic leaders in a community, for example, may be scale-free in the sense that gaining insight into one development opportunity does not diminish future ability to do so in another. But such networks may be of less value for pursuing noneconomic organizational goals.

In table 1, we present the two dimensions (scalability and fungibility) of organizational capabilities for sustainable development adapted from Levinthal and Wu (2010). Since the 1980s, U.S. local governments have developed a reliance on professionalized contract management, accounting and negotiating personnel, public-private development corporations, and tax incentives to lure or retain employers (Jensen and Malesky 2018; Peters and Fisher 2004; Rubin and Rubin 1987). These growth-related policy instruments, expertise, and contractual relationships constitute a core competency of local governments. While widely viewed as necessary to help stimulate economic growth, they are also commonplace among U.S. local governments (Peterson 1981; Rubin and Rubin 1987). Many cities in the United States and across the globe have also become active in taking steps to improve their economic, social, and environmental sustainability through smart growth, new urbanism, green building and other energy reduction programs, water conservation, recycling, and GHG reduction efforts (Hawkins et al. 2016; Portney 2013b). Recent empirical evidence suggests that tax-incentive-based business recruitment efforts can curtail these broader sustainability commitments (Deslatte and Stokan 2017). We argue this is because traditional economic development capabilities present opportunity costs; however, some development capabilities closely mirror sustainability activities and have higher fungibility. As such, they may be adaptable to new uses.

Related functions, activities, or processes can be better leveraged than unrelated ones. Competencies that can be stretched for use on similar functions generate positive synergies and are more likely to lead to what Bryson, Ackermann, and Eden (2007) call core, distinctive competencies. Cities rely on the fungibility of non-scale-free capabilities when they dedicate personnel or department staff to coordinate sustainability activities, through working groups or other mechanisms (Feiock, Krause, and Hawkins 2017; Krause 2013). Dedicated personnel can prioritize and manage projects, coordinate training on new technologies within departments, facilitate communication with stakeholders, put in place performance systems, and identify funding (Wang et al. 2012). These capabilities

Table 1 Public Organizational Capabilities for Sustainable Development

High fungibility	Financial expertise; line staff dedicated to sustainability coordination; LEED credentials; green raters	Organizational reputation; brand; community trust
Low fungibility	Sustainability director; GHG reduction investments; tax incentives; development subsidies for land, physical infrastructure	Economic development relationships; technology licenses
	Non-scale-free (positive opportunity costs)	Scale-free (zero opportunity costs)

are committed to specific activities and processes, but their fungibility allows them to be transferable to similar routines.

For instance, commercial and residential buildings produce roughly 40 percent of U.S. carbon dioxide emissions and consume more energy than the transportation or industrial sectors (Fowler et al. 2010). Communities can reap substantial energy, financial, and health improvements by focusing existing permitting services and building standards to incorporate higher goals (e.g., the International Energy Conservation Code) or to require buildings to undergo lighting upgrades or efficiency improvements made to heating, ventilating, and air conditioning systems when they are sold or renovated. Encouraging green buildings may also require retraining building inspectors—through professional credentialing with programs such as Leadership in Energy and Environmental Design (LEED)—to gain certifications and work with builders proactively to educate and help them comply with the revised codes. Economic development officials can also leverage their professional networks to connect local businesses with educational training and jobs related to sustainability. They can more readily seek to attract and retain businesses that practice and promote sustainability, and economic development agencies are positioned to promote local goods and services.

Strategic planning that emphasizes a wider range of economic, environmental, and social goals is likely to lean on both fungible capabilities (identified in figure 1) and less fungible sustainable development capabilities. When cities emphasize economic development as part of a sustainability strategy, they are more likely to develop positive synergies because of this fungibility. Local governments have practiced strategic planning for decades, identifying organizational missions, goals, and objectives and linking them to a desired vision, direction, and outcomes (Berry 1994; Bryson and Roering 1988; George 2020; George, Walker, and Monster 2019). Such activities are more leverageable, because they can be extended to similar endeavors. Economic development plans tend to identify employment sectors or clusters which communities target for growth.

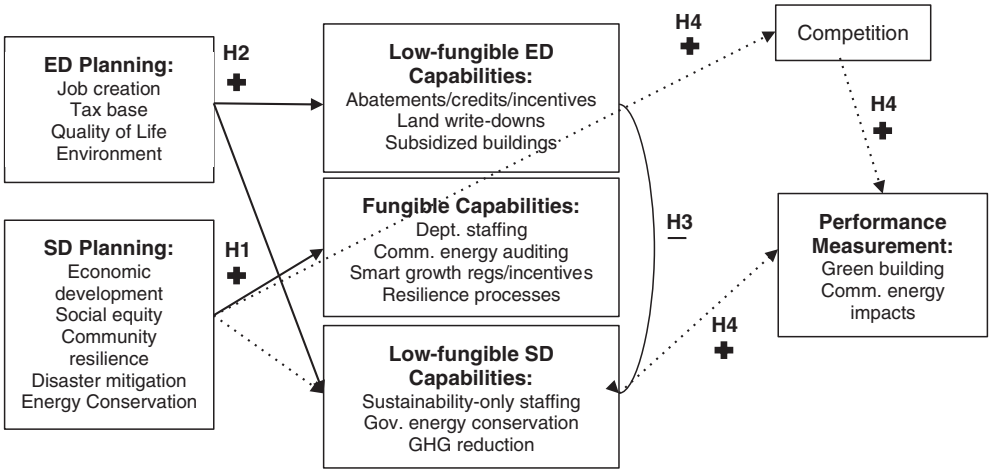
More recently, sustainability planning has also emerged in many communities, emphasizing "green growth" by incorporating energy efficiency, mixed-use development, resource protection, alternative transportation, or waste reduction objectives into existing organizational goals without compromising economic or quality of life aspirations (Alibašić 2018; Fiorino 2018). Conversely, when plans highlight climate change mitigation or adaptation, requiring the reallocation of existing resources to new purposes, this will result in greater commitment to less fungible investments. Specifically, we hypothesize that strategic planning which emphasizes a more encompassing vision of sustainable development (e.g., emphasizing planning priorities such as economic development, equity, and community resilience) will attempt to find synergies by identifying a range of capabilities with both high and low fungibility:

> **Hypothesis 1:** Strategic planning that places a greater emphasis on sustainable development will be positively associated with *both fungible and less fungible organizational capabilities* for implementing those strategies.

Organizational Silos: Diversification and Competition

Less fungible capabilities face limits on their economies of scope (Rumelt 1974). Hiring a city sustainability director may be advantageous for improving coordination and information flow across departments, but it is not an investment readily transferable to other tasks. Such commitments of resources represent indivisible fixed costs, and their deployment is driven by a logic of opportunity costs.

In considering how organizations learn and adapt to changing conditions, March (1991) described two distinct strategies: exploitation and exploration. Exploitation may provide quicker adaptation through refinement of an existing competency, while exploration involves search, experimentation, and invention (Cyert and March 1963). Finding an acceptable trade-off between the two depends on the aspirations of leaders and the competitive position of the organization. Greater investment in exploitation may lead to predictable short-term gains but forfeit long-term competitive



Note: Dotted line represents hypothesized mediation.

Figure 1 Measure Constructs and Hypothesized Relationships between Strategic Planning, Capability Commitments, and Performance Measurement

advantages, while overinvestment in exploration can sink an organization in the short term (Winter and Szulanski 2001). This is because exploratory strategies require reassigning non-scale-free capabilities to objectives with near-term costs but less certain future benefits. Doing so creates organizational silos that may ultimately benefit or hinder performance. An organization considering exploratory strategies must weigh these opportunity costs in light of their own competitive contexts and the trade-offs of diversification.

In local economic development, competition for firms continues to be a ubiquitous practice which reflects a siloing of capabilities (Leigh and Blakely 2016; Stokan 2013). Many economic development capabilities have low fungibility because of the locked-in nature of the policy tools used for projects and their tendency to create dedicated constituencies. These include long-standing locational strategies (e.g., infrastructure provision, incentive zoning, regulatory relief, neighborhood improvement) and direct payments to firms or other taxpayer-financed inducements (tax credits, abatements, grants). Redirecting development resources to pursuits outside of traditional business recruitment and retention runs the risk that firms that are expanding will choose to do so in other cities (Rubin and Rubin 1987; Zheng and Warner 2010). Policy makers must ask themselves whether continuing to exploit these approaches produces a greater marginal value than diversifying to include, for instance, the design, construction, and operation of green buildings. If the answer is yes, then exploration may present prohibitively high opportunity costs (Levinthal and Wu 2010).

Both traditional and sustainable development capabilities can reflect siloed investments. The creation of a tax increment finance (TIF) district commits the marginal tax revenue gains from economic activity to projects within the district for decades to come. Likewise, sustainability investment in municipal recycling programs, green infrastructure, and energy, water, or GHG reduction technologies may be either a fixed or a sunk cost, depending on the preferred evaluative outcomes. For instance, when a city decides to replace its automobile fleet with hybrid or electric vehicles, it can treat the existing fleet as a sunk cost (keeping them in service until they have exhausted their usefulness) or as a fixed cost (reselling the existing vehicles to convert more quickly). Private firms seeking to maximize profits consider fixed, sunk, and variable operating costs when they consider whether to adopt new or existing technologies (Besanko et al. 2009). In the public sector, the different treatment depends on whether policy makers value the move as a cost-saving effort or a way to quickly show reduced carbon-emissions. Either way, such capability commitments may be both non-scale-free and have low fungibility, meaning they are siloed or stovepiped investments that serve a specialized purpose (Amit, Muller, and Cockburn 1995).

Because of the risks, cities often seek to balance exploitation and exploration opportunities. When cities prioritize a broader array of job creation, tax base enhancement, quality of life, and environmental concerns through their economic development planning, we expect they will essentially hedge their bets by investing in both traditional economic development and sustainability-related capabilities which have low fungibility. These include economic development tax abatements, credits, payments for firms, and fixed infrastructure investments such as TIF districts, reflected in figure 1 as low-fungibility economic development capabilities. Low-fungibility sustainable development capabilities include hiring sustainability-related staffing and investments in GHG plans, government and community carbon-emission inventories, and reduction targets. Stated more formally, we hypothesize the following:

> **Hypothesis 2:** Economic development strategic planning which incorporates quality of life and environmental concerns will be positively associated with less fungible economic development and sustainable development capabilities.

These kinds of siloed investments reflect the trade-offs of diversification (March 1991). An extension of this argument is that investments in less fungible economic development capabilities come at some cost to similar investments in less fungible sustainable development capabilities. While public management scholars have argued that public organizations need to "stop delivering 'old' products and services . . . to free up time to develop 'new'" ones (Bryson, Ackermann, and Eden 2007), we argue that the characteristics of these capabilities—their non-scale-free and non-fungible nature—act as a barrier to such course corrections. Formalizing this expectation, we hypothesize that organizational capabilities dedicated to traditional economic development activities will be especially difficult to redirect to more sustainable development efforts:

> **Hypothesis 3:** Low-fungibility economic development capabilities will be negatively associated with investments in low-fungibility sustainable development capabilities.

As noted, a motivation for cities to devote capabilities to sustainability performance enhancement is the inherent, competitive nature of economic development in U.S. metropolitan regions. Levinthal and Wu (2010) provide a useful corollary when they note that the demand environment for firms plays an often underappreciated role in product diversification. While a standard finance argument is that firms with lower capabilities are more likely to diversify (Gomes and Livdan 2004), Levinthal and Wu (2010) show how diversification can also be a product of the demand context: firms with higher capabilities may diversify earlier if market contexts (demand maturity) increase the opportunity costs of remaining in established markets.

Diversification can be influenced by a signal from the "market" about the maturity of demand for traditional local government economic development outputs. While traditional economic development has been a primary motivation for cities for decades, we argue that sustainable development represents a new paradigm in which cities are finding opportunities to distinguish themselves as attractive locations to live and work (Fiorino 2018; Portney 2013a). Sustainable development can provide a competitive advantage for local governments, many of which have spent decades developing core economic development competencies. In some cases, this can be synergistic: when integrated with strategic management systems, sustainable development policy goals and objectives can guide capital improvement programs, departmental business plans, and land-use decisions (Feiock, Krause, and Hawkins 2017). It can also require reallocation: transferring resources into new assets, processes and activities when the old ways have proven less effective. In this

scenario, sustainability becomes a management prism through which government officials seek to distinguish their localities and leverage environmental or social benefits to appeal to firms and citizens (Greenberg 2015; Lubell, Feiock, and Ramirez de la Cruz 2009).

Given that incentive-based development strategies have become commonplace, we suspect that traditional incentives no longer offer the same competitive advantages they were perceived to provide decades ago. Rather, cities located in more competitive economic environments are more likely to try to differentiate themselves through quality of life, environmental amenities, and green growth strategies, resulting in increased attention to sustainability performance (Overton 2017). Because commitments to less fungible sustainable development capabilities also represent higher-risk, exploratory strategies, we expect this connection to be stronger between planning, less fungible capability commitments, and performance monitoring. To reach a determination about adequate ways to differentiate, competition will foster environments that necessitate greater usage of performance information. Thus, we hypothesize that competition will positively mediate the relationship between planning and sustainability performance information collection:

> **Hypothesis 4:** Economic development competition will positively mediate the relationship between strategic planning and sustainability performance measurement.

Data and Methods

To measure strategic planning, capabilities, and performance measurement, we use two national surveys of U.S. local governments. The 2014 International City/County Management Association (ICMA) economic development survey was sent to 5,237 U.S. local governments with a response rate of 22.9 percent (N = 1,201). City administrators and planners responding to the survey were asked to assess economic development barriers, priorities, and a range of activities they have undertaken to grow their local economies. We merged these data with the 2015 ICMA sustainability practices survey, which captured governments' sustainability activities, performance measurement efforts, and outcomes. The 2015 survey was sent to 8,562 local governments with a response rate of 22.2 percent (N = 1,899). Merging the two data sets to capture cities that responded to both surveys yields a data set with 463 respondents (N = 463). Comparing respondents from one of the ICMA surveys to those that responded to both, the matched cases were not significantly different by region of response but were more likely to come from metropolitan areas and be larger in population size. Additionally, matched units were more likely to have council-manager forms of government. Thus, the results may generalize better to larger cities in urban areas represented by council-manager forms of government. Based on the general representativeness of the respondents, and given that few national economic development surveys exist, we believe that there is a high level of external validity to our estimates.

We use item response theory (IRT) models to construct composite measures for sustainable development (SD) and economic development (ED) planning, ED capabilities with low fungibility, SD capabilities with low fungibility, capabilities that fall between these groups because of their high fungibility potential, and SD performance measurement. The motivation for an IRT approach is twofold. First, many of the items that make up the composite indices are observed rather than latent (the presence or absence of specific programs, investments, plans, or personnel), and IRT serves as a data-reduction method. Second, IRT models are advantageous because they weight survey items differentially based on both the degree of difficulty and discrimination of individual items (DeMars 2010; Deslatte and Stokan 2017). Thus, rather than use an additive index that assumes, for example, that each additional business incentive policy choice is equally difficult to adopt or implement (tax abatements versus employee screening), the IRT model produces distinct discrimination and difficulty parameters for each collection of items. The discrimination parameter indicates how well each individual item distinguishes between cities with similar levels of capability, while the difficulty parameters are partial estimates of the difficulty between levels of commitment within items (Deslatte, Schatteman, and Stokan 2019).

Because several of our survey items have ordinal scales, we utilize a graded-responses model that accounts for the difficulty of movement along a scale within each item. In this way, IRT models measure the relationship between an unobservable ability or trait measured by the instrument and the item response from surveys. Within this study context, IRT models are probabilistic methods which allow for greater differentiation between cities with varying levels of organizational commitment to performance. We then create a predicted trait, or theta, for this commitment which is included in a path model.

Our hypotheses are graphically depicted in figure 1. We use a path analysis to test these hypotheses, given our proposition that capabilities are combinations of observed characteristics but with complex interdependencies. A path analysis, much like a structural equation model, describes the directed dependencies among a set of variables to establish a causal directionality between the independent and dependent variables. Path analysis is advantageous for examining relationships between observed variables in a single model and can be an efficient method of measuring mediation (Acock 2013; Hoyle 1995).

Strategic planning is measured with responses to six items for *ED planning* (presence of an economic development plan and job, tax base, quality of life, environment, and social equity priorities identified) and eight items for *SD planning* (including elements addressing economic development, equity, energy conservation, climate change, community resiliency, disaster mitigation, green energy production, and public health). Of the cities responding to both surveys, 215 (46.4 percent) had adopted economic development plans, while 167 (36.1 percent) had adopted sustainability plans. We expect these planning commitments to be correlated, although a majority of cities in the survey had not adopted both types of plans.

From the 2014 survey, *low-fungibility ED capabilities* are measured using an IRT graded-response model that combines ordinal survey items measuring the level of use (4-point scale from "no use" to "high") for nine incentive types (tax abatements, tax credits, TIF, enterprise zones, special assessment districts, free land, infrastructure improvements, subsidized buildings, and grants).

Low-fungibility SD capabilities are measured using 22 dichotomous survey items measuring investments made in GHG reduction and green energy. These included adopting climate mitigation and adaptation goals, dedicated line items in city budgets for sustainability, conducting GHG inventories of government and community buildings, setting reduction targets, purchasing fuel-efficient vehicles, energy audits of city buildings, retrofitting buildings, traffic signals and lighting, requiring green certification for new buildings, and installing solar panels.

Fungible capabilities include 10 items measuring commitments of staffing and resource supports for programs that engage in residential and business energy audits, upgrades, and weatherization, along with eight items asking local governments whether they incentivized higher-density development near transit nodes or areas with existing infrastructure, accessory dwelling units such as basement apartments, mixed-use development, sidewalks, clustered subdivision design, green infrastructure, or green building standards. By and large, these represent efforts in which existing staffing and technical competencies can be repurposed to emphasize sustainable development goals, with minimal asset-specific investments on the part of the organizations.

Finally, the 2015 survey asked whether cities tracked the impact of energy and water conservation, the number of green buildings constructed, and recycling rates. We used these items to create a *sustainability performance* measure. The estimation strategy also includes several variables capturing perceived economic *barriers* and the influence of increases in *competition*.

IRT Model Results

One advantage of an IRT approach for measurement modeling is that it allows us to create a predicted value, or trait, for the commitment of each local government to specific policy objectives, ideologies, or strategies through differentially weighting individual survey items. Recent research has used such approaches to measure government transparency (Hollyer, Rosendorff, and Vreeland 2014), lawmaker ideology (Lauderdale and Clark 2014), and government policy commitments (Deslatte, Feiock, and Wassel 2017). We estimate the trait for each city using an empirical Bayes mean (or posterior mean), based on their responses to survey items. Table 2 reports the descriptive statistics of the IRT-constructed variables (bounded by 0 and 1).

Our analysis focuses on two types of strategic planning systems—traditional economic development and sustainability planning. The IRT models show that the grand posterior mean for ED planning (GM = .46, SD = .08) is larger than it is for SD planning (GM = .08, SD = .17). Similarly, the grand posterior mean for low-fungibility ED capabilities (GM = .625, SD = .21) is larger than for both fungible capabilities (GM = .22, SD = .29) and low-fungibility SD capabilities (GM = .25, SD = .17). On the whole, we interpret this as evidence that growth and job creation have been historically powerful motivations, leading to the development of core ED competencies for local governments. As a relatively newer policy objective, sustainable development capabilities—both high- and low-fungibility ones—were less prevalent among respondent cities.

Table 2 Descriptive Statistics for IRT-Generated Composite Traits (*N* = 463)

Variable	Mean	SD	Min.	Max.
Sustainability performance	.197	.113	.083	.532
Low-fungibility ED capabilities	.625	.209	.167	.921
Low-fungibility SD capabilities	.254	.168	.034	.834
Fungible capabilities	.221	.292	.002	.991
ED planning	.464	.077	.287	.584
SD planning	.081	.173	.001	.921
ED barriers	.844	.101	.42	.956
Competition (ord. scale)	1.68	.982	0	3

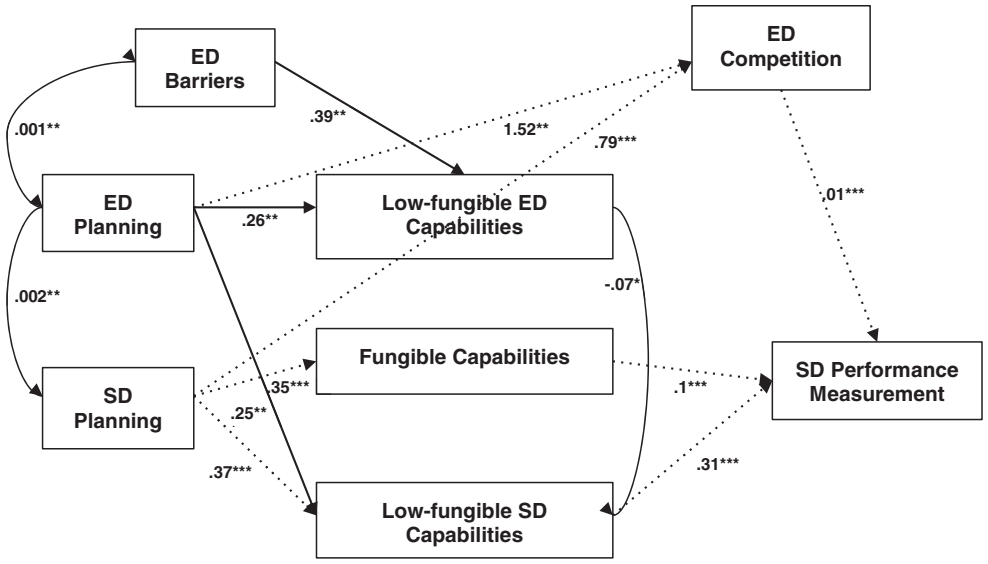
Analysis

Our analysis tests for both direct and indirect effects of strategic planning on capabilities and performance within a complex data structure. Figure 2 displays the statistically significant coefficients for the recursive path model. We test hypotheses by estimating our path model in R using the *lavaan* package, with bootstrapped standard errors. Our goodness-of-fit indices suggest a reasonably good fit (root mean square error of approximation = .055; comparative fit index = .981). The path model accounts for 44 percent of the variance in sustainability performance measurement.

We treat both ED and SD planning as exogenous in the model because these activities likely predate the development of the capabilities we identify, and because the process of planning can involve ascertaining the level of competition between cities.

Our first hypothesis was that sustainability planning will be positively associated with *both fungible and less fungible organizational capabilities* for implementing these plans. We find that SD planning is positively associated with fungible organizational capabilities ($\beta = .35$, $p < .01$) as well as less fungible ones ($\beta = .37$, $p < .01$). This is consistent with the argument that most city development capabilities are subject to economies of scope. As a result, cities are more likely to develop positive synergies in this area when they pay closer attention to related functions and opportunities to leverage them. This may, in fact, be a starting place for cities with limited resources seeking to take small steps or gradually implement sustainability policies. We see clear evidence that SD planning which encompasses a broader range of economic, social, resilience, and environmental objectives is positively associated with a broader range of core competencies, which can include smart growth, density, and inclusive land use; residential and business energy audits; and weatherization programs.

Consistent with our second hypothesis, ED strategic planning emphasizing tax base and employment growth are positively associated with less fungible ED capabilities ($\beta = .26$, $p < .05$). ED planning is also positively associated with less fungible SD capabilities ($\beta = .25$, $p < .01$). Because economic development plans may place some emphasis on social equity and environmental protection, this result suggests that cities that engage in more of these strategies view ED and SD as a way to hedge bets when considering exploitation versus exploration strategies. They may devote resources to ED capabilities with low fungibility (tax incentive programs) while also choosing to make environmental investments that are asset specific (green infrastructure or energy-efficiency technologies). We suggest this possibility in part because an estimated path coefficient between ED strategies and fungible capabilities is insignificant, which demonstrates the value in



Note: Dotted line represents hypothesized mediation.

Figure 2 Path Model Coefficients for Strategic Planning, Capability Commitments, and Performance Measurement

distinguishing between high and low fungibility for non-scale-free capabilities. Low-fungibility capabilities have a narrower range of applications, and their use in one area constrains their use in another. ED planning appears to be one process in which weighing the opportunity costs of such commitments is occurring.

We also find some support for our third hypothesis, related to the trade-offs of diversification. Less fungible ED capabilities are negatively associated with less fungible SD capabilities ($\beta = -.07$, $p < .1$). While the evidence here is weaker in the bootstrapped model, it is consistent with prior research, which has identified a negative relationship between tax incentive-based ED approaches and sustainability policy commitments (Deslatte and Stokan 2017).

Finally, self-reported measures of competition for economic development also mediate the relationship between SD planning and performance (hypothesis 4). Both the paths between SD planning and competition ($\beta = .79$, $p < .01$)and between competition and SD performance measurement ($\beta = .01$, $p < .01$) are positive and statistically significant. This is in line with the expectation that cities nested in more competitive economic environments may seek to differentiate themselves through environmental or green growth strategies and give more attention to sustainability performance (Overton 2017). It is also worth noting that the path coefficient between ED planning and competition ($\beta = 1.52$, $p < .01$) is significant, which suggests that both traditional ED and SD planning have an indirect relationship with performance that is mediated by the degree of perceived competitive pressure cities face. While the path coefficient for ED planning and competition is larger than for SD planning, the difference is not statistically significant. Our exogenous measure of ED barriers is also positively associated with less fungible ED capabilities ($\beta = .39$, $p < .01$). These findings speak to the potential lock-in effect that cities face when it comes to offering economic development incentives. Cities that face greater economic barriers and have committed resources to business incentive-based approaches find it extremely difficult to reallocate those resources.

We also find evidence that investments in less fungible capabilities are related to performance information collection. Less fungible SD capabilities appear to have a stronger, positive influence on sustainability performance measurement ($\beta = .31$, $p < .01$) than fungible SD capabilities ($\beta = .1$, $p < .01$). The difference between these coefficients is statistically significant ($\chi^2 = 6.48$, $p < .05$). This makes sense when we consider that these investments (e.g., GHG reduction for government, community buildings) often require larger budget allocations and greater community and stakeholder justification, support, or buy-in. Moreover, sustainability-dedicated staff often have incentives and/or explicit mandates to make use of existing performance data or find new ways to collect information on government activities, outputs, and impacts. The direct path coefficients between both ED and SD planning and performance measurement are insignificant; however, both have significant indirect effects on performance measurement.

Applying our capability rationale, cities facing competitive pressures about whether to diversify have an added impetus for linking planning and performance efforts to help decide or justify these budgetary and resource decisions. Because these capabilities are not scale-free or highly fungible, the logic of opportunity costs makes it advantageous to seek better performance metrics to assess the trade-offs.

Discussion and Conclusion

In the decades ahead, local government administrators face significant challenges in planning for climate change adaptation and helping to build and manage more resilient communities. It is important for practitioners and scholars to develop stronger insights into how and when managers should leverage resources or develop new capabilities to meet needs. This article presents a framework for considering the fungibility of capabilities devoted to

sustainable development. Governments create synergies and silos, and both have advantages depending on the demand context they face. It also demonstrates the potential value of integrating strategic planning and performance systems across governmental units. Prior research has shown that strategic planning—minus active, ongoing management—tends to occur intermittently rather than in an ongoing process of policy formulation, implementation, evaluation and adjustment (Poister 2010). As a consequence, strategic goals and objectives can be shelved when information on progress is lacking or disconnected from the decision venues managers occupy. This disconnect led Bryson, Berry, and Yang (2010) to conclude strategic planning guidance for practice often seems generic. Strategic management as a practical theory requires greater attention to how organizational learning is fostered and "strategy knowledge" is accumulated (Bryson, Berry, and Yang 2010). We contend that consideration of the characteristics of organizational capabilities—their fungibility and limits to scale or scope—are also key for making such connections.

Local governments have growing needs for strategic management systems, described as "performance management at a strategic level" (Poister 2010). A resource-based theory of public organizational capabilities can help explain how strategies take shape and influence organizational performance (Andrews, Beynon, and McDermott 2016). This article contributes to this effort by delineating between scale-free and non-scale-free capabilities of local governments. By linking the strategic management literature on firm capabilities and diversification to the opportunity structures facing public policy makers and managers, a clearer picture of the drivers and barriers to diversification takes shape.

Not surprisingly, we find U.S. local governments more committed to traditional economic development pursuits than broader sustainability goals. These commitments have a deleterious effect on sustainability objectives. Yet synergistic opportunities also exist, because economic development and sustainability performance systems rely on similar core capabilities. Integrating these planning, knowledge and accountability processes can help local governments meet the aspirational sustainability goals many are adopting.

Planning—whether focused on conventional economic development or sustainability—appears to positively influence the development of both traditional and sustainable development capabilities, leading to performance measurement systems. Adapting the argument of Levinthal and Wu (2010), we posit that this is due to the maturity of local economic development competition and the competitive advantage offered by sustainability innovations. However, finding stronger statistical evidence of this contention—and prescriptive pathways for managers—will depend on additional longitudinal analyses as public organizations adapt over time.

While strategic planning and economic development have drawn the attention of local government policy makers and managers for decades, sustainability performance remains uncharted territory for the vast majority of U.S. cities. Scholars must close a tremendous information gap to better understand how local governments develop the competencies and capacities—what we label non-scale-free organizational capabilities—to meet these challenges. This study utilized survey data to examine previously untested linkages between planning, capabilities and performance. Exploring change over time which truly reflects "performance management at a strategic level" requires longitudinal data and mixed-methods approaches to capture the progress and strategy adjustments of local governments.

As sustainability performance systems become more sophisticated and produce data over time, performance feedback capabilities are increasingly vital. Supervisors need to be able to review performance information with peers and subordinates, which Poister (2010) notes is critical for strategic planning to drive organizational decisions. Sustainability-oriented performance management systems are resource dependent but can be adapted from comparable, existing governmental activities. Future research should focus more closely on the means and methods by which such diversification occurs.

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