

**Municipal Capital Budgeting:
A Qualitative Comparative Analysis of Sample Illinois Municipalities**

BY

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This dissertation is dedicated to my beautiful and caring wife, *Niloofar Ghulami*, without whom it would never have been accomplished.

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SUMMARY

Public infrastructure is the lifeblood of every community and high-quality municipal capital assets facilitate economic development and prosperity. Despite its importance, capital budgeting and spending is often neglected by the responsible governments. As a result, the U.S. state and local infrastructure is degrading and in a state of decay.

Using a sample of thirty-two municipal governments in the state of Illinois, this study employs extensive case studies as well as a suit of Qualitative Comparative Analysis (QCA) techniques in order to investigate, first, factors that affect approach to municipal capital budgeting, and second, impacts that approach to municipal capital budgeting could have on level of capital and maintenance spending.

The results indicate that large municipal governments and/or municipalities where a hired manager – as the Chief Administrative Officer (CAO) – leads the capital budgeting efforts tend to have a professional and comprehensive approach to capital budgeting, while smaller governments or municipalities with political institutional forms tend to have a more shortsighted and unprofessional approach to capital budgeting. Finally, the results also show that approach to municipal capital budgeting matters and sample governments with a professional approach to capital budgeting do, in fact, have higher infrastructure and maintenance spending than cases with an ad-hoc and unprofessional approach.

I. INTRODUCTION

Capital infrastructure is the life blood of every community. Economic development and citizens welfare will not be achieved unless sufficient amount and quality of roads, bridges, sewerage systems, among other facilities, are provided and maintained by responsible governments. Adequate public transportation spending, for instance, could lead to higher air quality (by lowering the level of car emissions), and reduced accidents. Sufficient investment and regular maintenance of water and sewer systems, as another example, could lead to reduced viral infections and increased health and quality of life in communities (Aschauer, 1990; Munnell, 1990; 1992).

The first chapter of this research study is divided into four sections. First, the problem with lack of adequate attention to capital and infrastructure at different levels of government in the nation is explored, followed by an examination of the main research questions in the second section. The third section of the chapter explains the significance of the current research study and lists the numerous ways it contributed to the existing literature in public capital budgeting and spending. Finally, section four presents an outline of the remaining chapters of the dissertation document.

A. Statement of the Problem

Despite its impact on economic development and wellbeing of society, the nation's infrastructure is in very poor condition with an overall grade of D+ (ASCE, 2017). Decades of inattention toward capital maintenance and shortsighted practices and planning for future capital

needs, coupled with devastating environmental shocks such as the Great Recession, have left governments with deteriorating infrastructure conditions in dire need of repair and replacement; an unpleasant reality that makes sound capital decision-making a necessity for governments.

Professional organizations such as *Government Finance Officers Association (GFOA)* and *International City/County Management Association (ICMA)*, as well as the academic society, have always encouraged governments to spend on their infrastructure regularly even during recessions; and to avoid delaying capital investment and maintenance by all means possible if they want to “*avoid long-term costs of delayed maintenance and opportunity costs incurred by stifling economic development*” (Afonso, 2014, p. 494). These same professional and academic societies also recommend governments to base their capital decisions on formal, comprehensive, and systematic principles that consider infrastructure and maintenance needs of a community and then provide means to meet those needs (Marlow, Rivenbark, and Vogt, 2009; "Best Practices/Advisories | Government Finance Officers Association", n.d.).

Sound capital decision-making is important for governments because capital policies about large projects could affect governments and lives of citizens for many years to come (Doss, 1987). If made professionally and systematically, capital decisions could lead to economic prosperity and development. If, however, made shortsightedly and unprofessionally, capital budgeting decisions could lead to irreversible disasters such as the drinking water catastrophe that devastated Flint, Michigan in 2016.

The U.S. state and local infrastructure is in a state of decay (Hopland, 2016). One of the main reasons why we got to this point is because state and local governments only have a vague idea of their capital and maintenance needs (Pagano, 1984), meaning that these governments prepare their capital budgets in absence of accurate measurement of capital and maintenance

needs. Rather, these governments make capital and maintenance decisions based on value judgements and not based on “accepted” and professional measures.

State and local governments have often approached capital budgeting and need assessments on a more value-laden (and less professional) basis. Kamensky (1984) argues that *“infrastructure needs of state and local governments are really value judgements rather than accepted measures”* (p. 10). Pagano (1984) argues that governments approach capital decision and policymaking shortsightedly and incomprehensively mainly because capital expenditures and obligations, unlike operational expenditures, are less visible, less politically sensitive, and have very little, if any, short-term consequences.

Compared with operational expenditure categories, capital and maintenance expenditures are often considered as “easy targets” (Borge and Hopland, 2015). When governments need to make decisions about which areas of expenditure to cut, capital and maintenance spending is the first sacrificial lamb. For example, when in a harsh fiscal condition, a government prefers to postpone expensive but “less visible” capital and maintenance expenditures and focus all resources on less expensive but more visible current expenditures to maintain an acceptable level of vital services such as police and fire (Bifulco, Bunch, Duncombe et al, 2012).

Similar to poor fiscal condition, political incentives and motivations can also trigger unprofessional and shortsighted capital decision-making behavior among public officials. Research in Distributive Policymaking literature explains situations in which governments are prone to make imprudent capital decisions. Distributive policymaking argues that public elected officials tend to distribute targetable capital benefits (e.g. a new library, gymnasium, bike lane, etc.) to their constituencies, especially during election years, in pursuit of personal electoral benefits (MacManus, 2004).

Political incentive and motivation to distribute targetable goods to voters, then, translates into higher number of capital projects, most of which driven politically and not based on professional and policy-oriented criteria usually found in a capital improvement plan (CIP) or other similar capital budgeting programs. By embarking on large and expensive, yet unnecessary capital projects for the sole purpose of increasing their reelection bids, elected officials will also deplete fiscal reserves and impede attending to real and actual capital and maintenance needs when they eventually arise (Weingast, Shepsle, and Johnsen, 1981).

Although professional and academic societies always encourage governments to follow formal and professional capital and maintenance budgeting procedures, and to consider the long-term consequences/benefits of such decisions, most governments do not follow these professional recommendations and, as Forrester (1993) puts it, “[...] *are likely to approach capital budgeting with a short-term focus and limited expectations, similar to how they handle operational budgeting*” (p. 100).

Fiscal condition and various institutional forms of government are some of the factors that can affect approach to municipal capital budgeting. In fact, capital budgeting and planning is so entangled with other aspects of governments (both internally such as fiscal health, and externally such as the state of economy) that the research in this area should not be reduced to a linear analysis, in which a particular factor (e.g. form of government) is singled out and its impact on approach to municipal capital budgeting and planning is studied.

Rather, study in this area needs to account for a wide range of factors whose complex and nonlinear interactions could affect approach to municipal capital budgeting and decision-making in many different ways. This study will investigate approach to municipal capital budgeting and planning by taking various aspects of government (e.g. form of government, community wealth,

population growth rate, etc.) into account. Next section of the chapter lists these important aspects of governments and explains why they are selected for the analysis in the current research study.

Since municipal governments are at the forefront of service provision for citizens and carry the heavier load of aggregate state/local capital spending (Fisher and Wassmer, 2015, Miller, 1988), it is crucial to learn how municipal governments with various forms of governance, wealth, population growth rates, sizes, and levels of residentialness approach their capital budgeting and decision-making. The next section elaborates on two research questions in this research study and explains why these are critical questions worthy of investigation.

B. Research Questions

Local capital budgeting, in general, and municipal capital decision-making, specifically, is a complex process that affects many generations, involves many decision-makers, and is affected by numerous environmental and organizational factors. Capital budgeting and spending is mostly driven by the characteristics of communities and the demand for capital/infrastructure. The demand for capital and infrastructure, itself, is driven by many factors such as population growth, community wealth, economic cycles, environmental disasters, etc. (Bates and Santerre, 2015).

Although capital and infrastructure demand in a community can significantly impact the level of capital spending, not all governments react and respond to such capital/infrastructure demand the same way. Using a sample of Illinois municipal governments with different institutional arrangements, socioeconomic characteristics, capital/infrastructure demand levels, and regional and environmental threats, this study intends to understand capital budgeting

processes and outcomes in municipal governments. Specifically, the current research study investigates:

- 1) Whether governments' approach to capital budgeting and decision making is conducted in a comprehensive/professional (vs. unprofessional/ad-hoc) fashion. And if they do, then, what are the characteristics of municipal governments with a professional / comprehensive, and what are the characteristics of the ones with an unprofessional / shortsighted approach to municipal capital budgeting?
- 2) Whether governments' approach to municipal capital budgeting and decision-making affect the level of infrastructure and maintenance spending?

Based on a thorough review of the literature in municipal/state capital budgeting and infrastructure spending, I have identified five factors that may significantly affect the relationships I am examining. These factors are: 1) population growth during the 2000-17 period, 2) median household income, 3) extent to which the jurisdiction is residential or commercial/industrial, 4) spending size of the government, and last, but certainly not least 5) form of government and institutional arrangement.

These factors were used to construct a sampling frame (discussed in detail in chapter 3) as well as guide the selection of cases within the frame to examine some of their effects. Specifically, this study will focus on the impact of form of government and institutional arrangements, size of the government, community wealth, population growth rates, and level of residentialness (vs commercial/industrial) in the jurisdiction on municipal governments' approach to capital budgeting, decision making, and spending as stated by the two aforementioned research questions.

I have chosen thirty-two governments for my research. I conducted a thorough qualitative investigation of each case using a wide range of data sources including, but not limited to, archival records, financial databases, publicly available financial reports, and structured phone interviews with government officials. These phone interviews were conducted using the survey questionnaire in the appendix section, which provide specific answers to many questions and allow for comprehensive qualitative data on each case to be collected using an unstructured format for part of the interview.

Due to the overcomplicated and nonlinear nature of capital budgeting and decision making, rather than a quantitative method of analysis, this study employs a qualitative method to investigate causes and effects of select factors (some of which stated above) on municipal capital budgeting and spending. Specifically, this research study will investigate these causes and effects using a Qualitative Comparative Analysis (QCA) and case-study methodology, through surveying a sample of 32 Illinois municipal governments. Based on Boolean algebra, and as a case-oriented methodology, QCA is useful for investigating complex, non-linear, and contingent causal relationships between various phenomena. Given the overly complicated nature of municipal capital budgeting process, QCA perfectly fits the purpose of this analysis.

QCA methodology first identifies cases with *positive* and *negative* outcomes. Secondly, cases with positive (negative) outcome are compared against other cases with positive (negative) outcome in order to understand which conditions are *necessary* and/or *sufficient* for the positive (negative) outcome to occur. Of course, offering a full discussion on the benefits and mechanisms of QCA is beyond the limited scope of this chapter. However, chapter 3 provides a detailed discussion on QCA methodology, how it is conducted, its different types and forms, benefits and limitations, as well as the data and the sample used in this study.

In addition to QCA, this study will utilize (rather extensively) case-study analysis to examine the approaches that the sample governments take in municipal capital budgeting and planning. Using comprehensive qualitative data collected from many sources such as the interviews, online local news websites, council minute documents, publicly available fiscal and budget documents, among other data sources, chapters 4 and 5 will investigate the thirty-two sample municipalities in order to uncover and understand their approach to both capital budgeting and decision making as well as capital spending behaviors.

Scholars of the field, as well as professional organizations such as GFOA and ICMA, encourage governments to follow “best practice” recommendations by establishing a periodic inspection program (PIP) that sets the plan for regular maintenances of capital stock and infrastructure, a forward looking capital improvement plan (CIP) that provides a long-term perspective for the capital budgeting, a separate capital budget (SCB) that separates the capital and operating budgeting processes, a dedicated professional capital planning team that helps government make sound capital decisions based on actual capital needs of the population and free of political and shortsighted considerations, a dedicated capital revenue source that balances tax revenues and debt, among other recommendations (Portner, 2011; Bunch, 1996; Marlowe, Rivenbark, and Vogt, 2009; "Best Practices/Advisories | GFOA", n.d.).

However, and regardless of all the professional capital budgeting recommendations mentioned above, few governments follow these guidelines (Forrester, 1993; Nunn, 1990). In fact, more often than not they do not follow these “best practice” guidelines, which may explain why the U.S. infrastructure is in such a daunting shape and in the state of decay (Hopland, 2016; ASCE, 2017).

Investigating how governments with different institutional arrangements and demographic characteristics approach capital budgeting is a task long overdue. By examining the causes and effects between various characteristics of municipalities and their approach to capital budgeting and spending, this research will shed much needed light on how the capital budgeting process is shaped and altered by different budgeting actors (i.e. elected and appointed officials), and whether operating size, community wealth, population growth, and level of residentialness in a community impact municipal capital budgeting and decision-making in a meaningful way. The next section of the chapter explains the significance of this study and lists a few ways in which it contributes to the current literature.

C. Significance of the Study and Contributions

The literature in local and state capital budgeting is filled with studies that investigate the isolated impact of a single factor on municipal capital budgeting and spending. All of these studies focus their analysis on one factor (e.g. form of government) and examine whether such factors impact municipal capital budgeting and spending behavior. Doss (1987), for example, investigates the impacts of institutional form of government on municipal capital budgeting behaviors. Using data from a survey of 851 U.S. cities with populations more than 10,000, the author finds that council-manager cities are more likely, than mayor-council cities, to adopt CIP, SCB, and PIP.

Nunn (1996), as another example, investigated the impacts that different institutional forms of governments have on the level of capital spending. Comparing seven Indiana mayor-council cities and seven Texas council-manager governments, Nunn (1996) found that, unlike Indiana mayor-council governments, Texas council-manager governments followed a more formal and professional approach to capital budgeting and spent more per-capita on capital

facilities, water, sewer, and road infrastructure. Wang and Wu (2018) found similar results. Using a data set for 100 large cities in five select years over the 1992–2012 period, Wang and Wu (2018) found that council-manager governments often have higher levels of capital spending per-capita compared with their mayor-council counterparts.

Unlike Doss (1987), Nunn (1996), and Wang and Wu (2018) – and other studies in the literature – this study will not investigate the impacts of a single factor (e.g. institutional form of government) on approach to municipal capital budgeting. Although institutional form of government is a very crucial factor in explaining why some governments approach capital budgeting and spending different from others, it is by no means the only deciding factor. It is the strong belief of this study that capital budgeting is a complicated and multi-dimensional phenomenon affected by many internal (e.g. form of government) and external factors (e.g. state of economy and state-wide rules and regulations), and it needs to be treated as such. Therefore, this study will use a nonlinear and complex methodology known in the literature as Qualitative Comparative Analysis (QCA) as well as numerous case studies to investigate municipal capital budgeting in light of the combined and complex causal effects of a multitude of factors that can affect and shape a government’s approach to capital budgeting as well as spending behaviors.

Two additional factors separate the current study from the previous research: *first*, unlike Doss (1987), Wang and Wu (2018), and majority of other previous research, that utilized a binary classification of form of government (i.e. council-manager vs. mayor-council), I will utilize an updated version of form of government – advocated by Frederickson, Johnson, and Wood (2004) – by investigating different dimensions of form of government (specifically type of council and form of chief administrative officer) in order to provide a more inclusive measure of government form and institutional arrangement.

In *The Adapted City: Institutional Dynamics and Structural Change*, Frederickson et al (2004) hold that it is overly simplistic to think of form of government in a dichotomous format and that as time goes by, more and more cities realize and recognize benefits of both forms and partially adapt themselves to positive aspects of each form; hence the term “adapted city”. Therefore, in this research I will recognize the form of government as a continuum (as suggested by Frederickson et al, 2004) and not a simplistic dichotomy (i.e. council-manager vs. mayor-council) used by most previous research.

Unlike previous research that investigated the impacts of a simplified version of form of government (i.e. only focusing on the CAO and whether the government is run by a mayor or a manager) on municipal capital budgeting, the current study will utilize a more inclusive version of form of government, and also investigates the impacts that different forms of council (i.e. at-large vs. district) have on municipal capital budgeting. I believe that the influence that council members have on capital budgeting is overlooked by the previous research and that these elected officials have as much influence on capital decisions, if not more, as CAOs have (Choudhury, Clingermayer, and Dasse, 2003).

Choudhury et al (2003) found that states that have larger number of electoral districts, devoted a larger portion of their state budget to capital projects and engaged in “pork-barrel” politics. As will be discussed in more details in chapter 2, I expect to find that governments where incumbent council members are elected in districts (vs. at-large) have higher tendency toward political, and less professional, capital budgeting behavior manifested in lower support for, and adoption rates of, professional capital budgeting processes and programs.

Secondly, unlike Doss (1987), Nunn (1996), Wang and Wu (2018), and most other studies in the literature, in this research I will focus on local governments *within* one state (i.e.

state of Illinois). This is because governments from across the nation often operate under very different circumstances and state rules which significantly impact local capital budgeting (e.g. drastically different Tax and Expenditure Limitation systems). So, in order to hold cross-state environmental factors constant, the current research will focus on Illinois municipalities with populations greater than five thousand residents. The final section of the chapter will provide and briefly discuss the outline of the chapters in this research study.

D. Chapter Outlines

The second chapter contains a thorough review and discussion of previous literature related to municipal capital budgeting and major factors affecting approach to capital budgeting and spending as well as theories and frameworks that explain such impacts. Additionally, professional and comprehensive approach to municipal capital budgeting is compared and contrasted against unprofessional and political capital budgeting and planning in chapter 2.

Chapter three will discuss the research setting and methodology. First, research setting and the method by which cases were selected are discussed, followed by a review of data sources and the multiple ways through which the data is collected for analysis. Finally, the analytical strategy selected for the study is discussed. A detailed description of Qualitative Comparative Analysis (QCA) is presented, its major facets (and how they differ from those of more traditional qualitative and quantitative analyses) are discussed, and the mechanism through which QCA analyzes the data (i.e. Boolean algebra) is thoroughly and comprehensively illustrated.

Chapter four presents a comprehensive descriptive analysis of the data acquired from the questionnaire attached in the appendix section. First, the sample cases are compared against other similar municipal governments in Illinois regarding their socioeconomic, institutional, and fiscal characteristics. This comparison allows the reader to place the sample in the bigger picture

of all comparable Illinois governments. Then, data from each one of the six sections of the survey questionnaire is compiled and analyzed, and sample governments with various institutional, demographic, and fiscal characteristics are compared with one another. Lastly, major “themes” and “stories” that stand out in the data are explored and discussed.

The fifth chapter presents the results of the QCA and case-study analyses. First, an analysis is conducted to investigate the first research question (please refer to section B of this chapter) and examines the causal relationship between institutional, fiscal, and socioeconomic characteristics of sample governments on one hand, and their approach to municipal capital budgeting and planning, on the other.

Next, a second QCA analysis is performed that explores the second research question and examined whether there is any causal relationship between sample governments’ approach to capital budgeting and their level of capital/maintenance spending. The chapter concludes with a discussion on the findings of both QCA analyses and uses numerous case studies to further elaborate on the findings of the research study.

The sixth and final chapter of the document is divided into two sections. The first section presents a comprehensive account of all the research findings that were examined in chapters four and five and discusses the policy implications of these findings that could benefit other municipal governments with similar institutional and socio-economic characteristics. The second and final section of chapter six will shed lights on specific limitations of the current research study and suggest avenues through which the future research could improve upon this study by overcoming its limitations.

II. THEORETICAL FRAMEWORK AND LITERATURE

Capital budgeting is a very complex process that could span over many years and involves many decision makers from different departments within a municipal government. Capital decisions are not made in a vacuum; instead, they are affected by different factors, both internal and external to the government. At the same time, capital budgets can affect many aspects of governments such as operational budgets or economic growth rate (Bland and Nunn, 1992; Beckett-Camarata, 2003; Srithongrung, 2008).

This chapter is divided into three sections. The first section will review the literature related to municipal capital budgeting and present a model that will guide the analysis in the current study. This model distinguishes between major external and internal factors that can affect municipal capital budgeting.

The second section of the chapter provides a comprehensive account of different approaches to municipal capital budgeting and what it means for a municipal government to have either a professional/comprehensive or an unprofessional/shortsighted approach to this process. The second section will also discuss the literature related to five variables of interest that are expected to impact the approach to municipal capital budgeting. These five variables are government size, wealth, institutional form, land-use, and growth rate. From among these five factors, special attention is given to *form of government* because it is a major factor that can affect overall approach to municipal capital budgeting and, hence, a focal point of attention in the current research study.

To better understand the implications and significance of form of government in the current study, two frameworks of *Complementarity Model of Politics-Administration* and *Distributive Policymaking* are discussed in section B. The former framework explains the limitations of the normative view of form of government and helps the current study to provide a new classification system of this concept that can better examine the causal relationship between it and approaches to municipal capital budgeting. This new classification will also help to improve the shortcomings of the politics-administration literature. The latter framework explains the mechanism by which this study expects governments with different institutional arrangements – as determined by 1) form of council (at-large vs. ward-system) and 2) type of chief administrative officer (CAO; manager, administrator, or strong mayor) – to approach municipal capital budgeting.

Finally, the third section of the chapter will discuss the second major point of inquiry in the current study – i.e. level of municipal capital/maintenance spending. In this final section, the literature related to municipal capital spending is reviewed together with a list of five specific variables (i.e. approach to municipal capital budgeting, debt, grants, level of fund reserves, and approach to economic development) that are expected to impact level of capital/maintenance spending.

A. Public Capital Budgeting

To date, the body of the knowledge of public capital budgeting has largely revolved around examining capital budgeting at state and local levels of government. In this regard, one major area that has received considerable attention is uncovering the capital budgeting and management practices that are influenced by political, economic, socioeconomic, and administrative institutions (Yusuf and Srithongrun, 2017).

Understanding how capital budgeting is performed and practiced in public and government organizations has always been a great aspiration for scholars of the field. Numerous studies (major ones discussed below) have attempted to shed lights on the “unknown” of government capital budgeting and planning. Considering that capital budgeting in the public sector (unlike capital budget in private sector) lacks a definitive theory to explain its mechanisms and philosophy could be the main reason so many scholars of the field have attempted to uncover the determinants of public capital budgeting and spending.

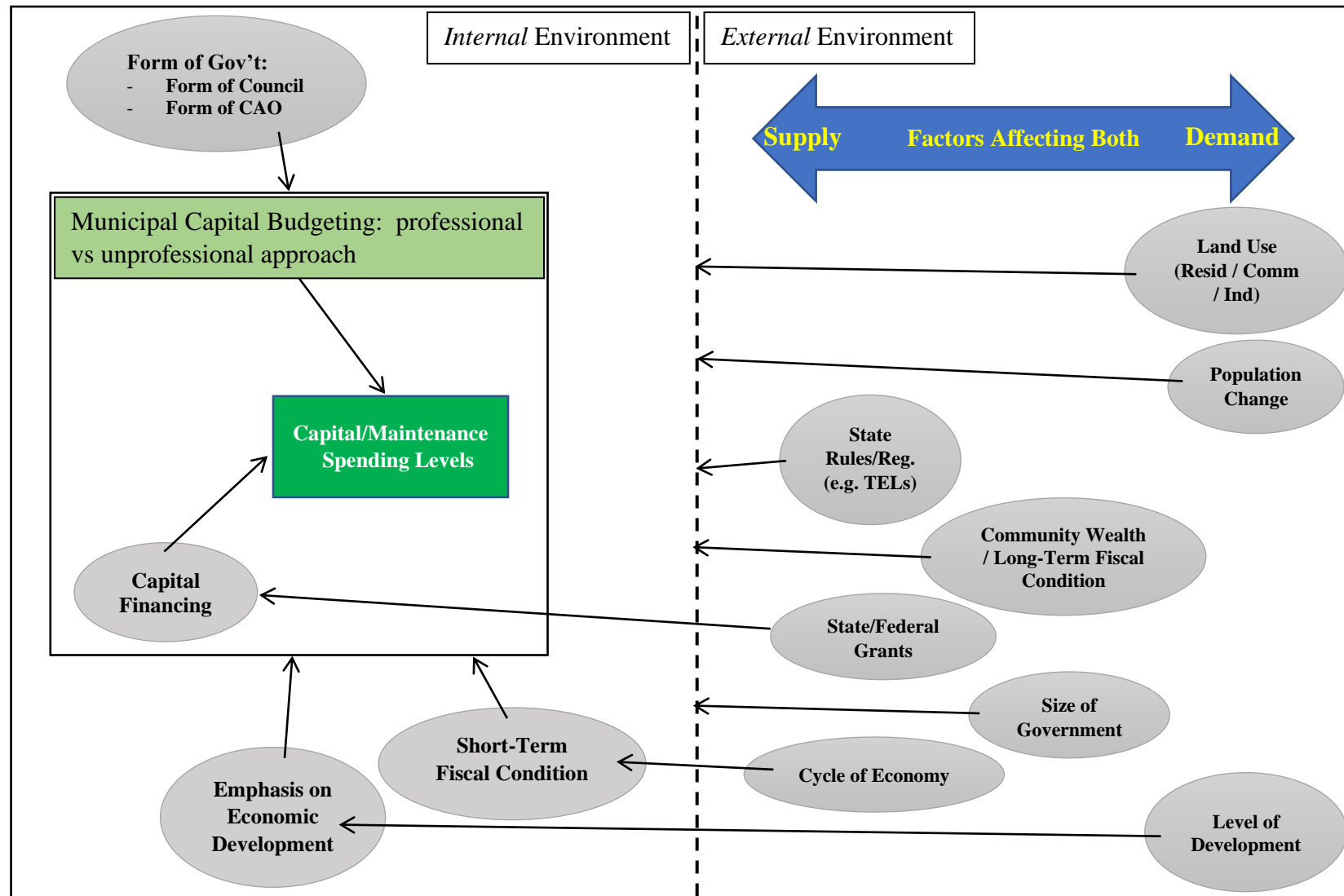
Bozeman (1984) maintains that lack of attention to developing theories for public capital budgeting (as opposed to private capital budgeting) is because capital budgeting decisions in the public sector do not have readily identifiable and quantifiable goals (i.e. profits). He argues that it is easier to develop theory for a field of study when there is some agreement on the goals of inquiry. However, such agreed-upon goal in public capital budgeting does not exist. Unlike private entities that have a “bottom line” and invest in capital for the sole purpose of profiting shareholders, capital investment in public and government organizations cannot be justified only by monetary goals and efficiency. Rather, investments in the public sector need to follow equality and social equity, and other goals that are not recognized as primary goals by the private sector (Nalbandian, 1990).

Therefore, because no all-inclusive theory exists that can explain capital budgeting and planning behaviors of public/government organizations, research in this area has largely focused on investigating its determinants in order to understand how organizations with various characteristics and in different circumstances approach capital budgeting decisions. In other words, since no overarching theory exists that can explain the mechanisms of public capital budgeting (as opposed to private capital budgeting), then there is no "deductive" way of knowing

the mechanisms of capital budgeting in the public sector. So, in order to understand capital budgeting in public sector, research in this area has adopted an "inductive" method and tried to uncover mechanisms of public capital budgeting by investigating the characteristics of organizations and their environments.

In the remainder of this section, Figure 1 synthesizes the findings in the literature into a model and explains the factors affecting municipal capital budgeting. Capital budgeting influences many aspects of governments and is also influenced by many internal and environmental factors. A review of the literature shows factors such as the cycle of economy, demographic characteristics, form of government, and statewide and national rules and regulations, among other factors, can significantly affect municipal capital budgets and budgeting practices. Figure 1 demonstrates a holistic picture of the major factors that can affect municipal capital budgets and budgeting processes.

Figure 1 – Major Internal and External Factors Affecting Municipal Capital budgeting



- In this diagram, arrows indicate the direction of causes and effects.

Figure 1 illustrates a synthesis of findings of previous literature as they relate to municipal capital budgeting and spending within a government using a systems framework. Major factors affecting municipal capital budgeting are separated based on whether they are external (the right-hand-side of the model) or internal (left-hand-side of the model) to the governmental system. Some internal factors, such as level of capital financing that are within the municipal capital budgeting subsystem, are factors that are under the organization's control and the government can shape them in response to its surrounding environment. Other internal factors that are external to the municipal capital budgeting subsystem, such as form of government, are not under direct control by the government, but are shaped in the long-term as governments adopt an institutional framework that helps them adapt to their surrounding political and demographic environments. Factors that are external to the governmental subsystem, on the other hand, are completely beyond the control of the organization (e.g. the business cycle, population growth rate, or national/state rules and regulation) and the government does not have the power to alter them directly and in the short run.

In separating and distinguishing between internal and external factors, the model in figure 1 is informed by Herbert Simon's seminal work in systems theory and artificial intelligence that has been heavily utilized in the science of organization. Whereas the traditional view of organizations theory (i.e. "closed-system" theory) considered the organization as a closed system secluded from and unaffected by its surrounding environment, the natural system (also known as open system) theory incorporated Simon's vision of natural organisms and argued that similar to any other natural organism an organization is also affected (and impacts) its surrounding environment.

Simon (1962) explains that every natural/open system is itself divided into subsystems and that a complex natural system (such as a municipal government) is composed of interrelated subsystems. The system, Simon argues, is *nearly decomposable* which means that subsystems affect each other primarily in the long run and this affect is in the aggregate. Additionally, subsystems functions somewhat independently of each other and are basically unaffected by other subsystems in the short run (Laporte, 2015; Simon, 1962; 1969). On the other hand, the behavior of subsystem components is likely to have a short-term effect on other components within the subsystem relative to the long-term effects of one subsystem on another. In this case, we know that the effects of the system's external environment on its internal environment will not change rapidly relative to the effects of its subsystems on each other. Similarly, the effects of the components of the subsystems on each other will be more direct and immediate than the effects of subsystems on each other.

The model in figure 1 illustrates that the decomposable system investigated in this research is the municipal government. The government has an external environment that consists of land use, population change, state and federal rules and regulations, level of community wealth, state and federal grants, size of government, level of development, and cycle of economy. Its internal environment consists of a municipal capital budgeting subsystem (that has the characteristic of being professional vs unprofessional) and other subsystems that determine form of government, short-term financial condition, and the government's policy emphasis on economic development. Capital maintenance and spending levels and capital financing approaches are within the municipal capital budgeting subsystem and so are determined directly by the approach to capital budgeting.

The internal subsystems of the government and their important features for this research are shown on the left-hand-side of the dotted-line in figure 1. These internal factors are primarily affected in the long-term and in the aggregate by the various external factors, which affect capital supply and/or demand on the right-hand-side of the dotted-line in the figure. As shown in the figure, the approach to capital budgeting is a characteristic of municipal capital budgeting subsystem. As such, it is not expected to be affected in the short-term by most external environment factors, including land-use, population change, community wealth, and size.

Both land use and population change can be good indicators of overall capital demand in the community, and their effects on the approach to capital budgeting do not change in the short-term. More residential and/or populated communities have higher demand for capital spending, and their effects on the government system and the municipal capital budgeting subsystem do not change in the short-term. Community wealth is considered to be a good indicator of the long-term fiscal health of the government, and it is expected that governments in wealthier communities will have access to more stable sources of revenue (e.g. property tax). Finally, government size is expected to influence the approach to capital budgeting more slowly than form of government. Larger governments that enjoy higher administrative and fiscal capacities are expected to have a more professional approach to capital budgeting.

On the other hand, the cycle of the economy is expected to affect the government's short-term fiscal condition more directly than other external factors. Similarly, the level of development within the jurisdiction of the government will have a more direct effect on a government's policy emphasis on economic development than other external factors, and state and federal grants are expected to have a direct effect on capital financing decisions within the municipal capital budgeting subsystem.

Additionally, as figure 1 shows, the approach to municipal capital budgeting is a short-term phenomenon relative to form of government (i.e. municipalities do not change their institutional form of government very often). However, form of government is part of the internal environment, which is expected to have a more direct and short-term effect on approach to capital budgeting than factors in the external environment. Thus, it is expected that approach to municipal capital budgeting will be affected by form of government (that is a factor at the institutional level of internal environment) and external factors over the long-run, and that the impact of these factors on approach to capital budgeting will not change dramatically in the short-run.

Within the municipal capital budgeting subsystem, capital and maintenance spending levels will be more directly affected in the short run by methods of capital financing than form of government, short-term financial condition, and emphasis on economic development. On the other hand, capital and maintenance spending will be more directly affected in the short run by short-term financial condition, emphasis on economic development, and form of government than the external factors on the right hands side of figure 1.

In particular and as figure 1 indicates, level of capital/maintenance spending is expected to be affected in the short-run by capital financing method (a component of municipal capital budgeting subsystem affected by the level of federal/state grants), short-term fiscal condition (an internal subsystem mostly affected by the cycle of economy), emphasis on economic development (an internal subsystem affected by the level of economic development in the community), and approach to municipal capital budgeting (a characteristic of municipal capital budgeting that is an internal subsystem).

Section C of the chapter explains in detail why each factor is expected to affect level of capital/maintenance spending. In summary, short-term fiscal condition of a government indicates how much reserve is available for capital spending, while method of capital financing (debt and/or grants) provides a holistic picture of available options at government's disposal for capital projects. Emphasis on economic development can also have a considerable impact on the levels of capital and maintenance spending and the expectation is that governments that put more emphasis on economic development will also have higher levels of capital and maintenance spending. Finally, approach to municipal capital budgeting is also expected to significantly impact capital and maintenance spending levels and it is expected that governments with a professional approach spend more on capital and maintenance.

B. Municipal Capital Budgeting

This second section of the chapter is divided into two subsections. Subsection 1 provides a review of the literature and discusses the origins of different views of public capital budgeting and the methods by which this research study will define and measure professional and unprofessional approaches to municipal capital budgeting. Defining professional and unprofessional approach to municipal capital budgeting will, then, help investigate the first research question that enquires about the factors that can affect a municipal government's approach to capital budgeting.

In the second half of the section, subsection 2 will then discuss the literature related to five variables of interest that are expected to impact and influence approach to municipal capital budgeting. These five variables are size, wealth, growth, land-use, and institutional form of government. Subsection 2 will also discuss the reasoning for why these variables are expected to influence municipal capital budgeting.

1. Different Approaches to Municipal Capital Budgeting

In short, a professional capital budgeting is a forward-looking approach where capital and maintenance spending is not neglected and capital projects are ranked based on well-established criteria and other professional activities. In contrast, a government with an unprofessional approach does not have a clear idea of its capital needs, capital decisions are short-sighted, capital maintenance and investments are sacrificed for the more imminent spending categories, and projects are selected based on political considerations rather than well-established criteria.

It was discussed earlier in the chapter that unlike capital budgeting in the private sector, public capital budgeting has no overarching theory explaining its mechanisms. Such lack of a central theory left scholars and practitioners of the field with only discussing tools and techniques that improve public capital budgeting. In the words of Alan Steiss, “*The theories of capital budgeting [have] not been set forth; rather the emphasis [...] has been on devising and improving the techniques of capital budgeting*” (Bozeman, 1984).

The normative view of public capital budgeting sought a “rational” approach to capital budgeting. In this orthodoxy view of municipal capital budgeting, successful governments pursued an *idealized* version of capital budgeting derived from developing and following Capital Improvement Plans (CIP) and master plans (Srithongrung, 2008). Additionally, a successful capital budgeting would mean following a set of econometric tools and criteria in selecting capital projects. City administrators were believed to select capital projects *objectively* and based on a myriad of discounted cashflow techniques such as the Net Present Value (NPV), Internal Rate of Return (IRR), and Return On Investment (ROI). Therefore, public capital budgeting would be reduced to a cost-benefit analysis when choosing the most appropriate projects (Nunn, 1990).

Empirical research, frankly, does not indicate that such “rational” tools and techniques are being widely used by governments in making capital decisions (Srithongrung, 2010). Using 1992 survey data on 120 U.S. cities, Forrester (1993) investigates whether municipal governments budget for capital using a rational decision-making process, or if the process is less structured and more political like the operating budget process. The author finds that in few of the cases does the approach resemble a “rational” capital decision-making suggested by the “orthodoxy” school of thought and, in fact, capital budgeting in these governments largely resembles their operational budgeting. Similar to how they approach operating decision-making, governments also treat capital decisions as more of a short-term exercise and not based on sophisticated and econometric discounted cashflow techniques. It appears that capital budgeting in many of these cities are more of a product of historical evolution and the lessons they have learned over the years of operating budgeting has overflowed into their capital budgeting process (Miranda and Hillman, 1996).

Other studies found similar results. Using 2012 survey data on state governments, Ermasova and Vick (2015) found that even though discounted cashflow techniques are being widely used in the private sector for ranking capital projects, such tools and techniques are rarely used by state governments. Chan (2004), surveying Canadian municipalities, also found that only a minority of these municipal governments use capital budgeting techniques, such as payback period, ROI, or IRR, in order to evaluate capital investment projects. Sekwat (1999) also observed that approximately sixty-three percent of all Tennessee municipal governments do not use formal capital budgeting techniques to rank their capital projects.

Criticizing the normative approach to public capital budgeting, Pagano (1984) asks a critical question: if having a capital budget (or any other formal capital budgeting documents, for

that matter) is the key to having a sound and sufficient capital stock, then why are so many state and local governments (even the ones that have a capital budget) are facing deteriorating capital stock and have such a poor-quality capital infrastructure? Why is the capital and infrastructure problems not confined to only governments that do not have capital budgets? Arguing that just “having” a capital budget (as the orthodoxy view suggests) is not going to be enough, Pagano (1984) explains that having capital budgets (or other capital documents) is only one piece of the capital budgeting puzzle, which together with other pieces shape a holistic policy that strives to solve the problem of deterioration. He notes that another piece of this puzzle is *how* capital budgeting is practiced in governments.

Nunn (1990) argues against the notion of “rational” municipal capital budgeting and holds that given the limits surrounding the capital budgeting, this practice at best follows Herbert Simon’s notion of “bounded rationality” in which administrators can only *satisfice* capital needs, rather than maximize (as theory of rationality suggests). In explaining the overly complicated nature of municipal capital budgeting, Nunn states:

“The capital investment decisions of city governments are part of a complex process structured by formal and informal governmental policies and driven by demands internal and external to the municipal organization. Consequently, there is need to explore the dynamics of urban infrastructure decisions and how they are affected by what is occurring not only inside but also outside the bureaucracy of city government” (p. 328).

Nunn’s (1990) and Pagano’s (1984) arguments against the traditional view of public capital budgeting, along with empirical evidence discussed earlier in this subsection, called in a new era of more realistic and pragmatic approach to municipal capital budgeting. In this new vision, municipal capital budgeting is an increasingly overcomplicated phenomenon affected by numerous exogenous as well as internal factors, as figure 1 indicates.

In this pragmatic view of municipal capital budgeting, simply establishing capital budgets, CIPs, and other capital budgeting documents does not necessarily indicate that the government follows a professional approach to capital budgeting. Governments need to actually follow through with these formal documents and their approach to capital budgeting needs to be examined carefully before it can be labeled either “professional” or “unprofessional”.

One major shortcoming of the previous research is that it considers having a separate capital budget (SCB), CIP, or a Periodic Inspection Plan (PIP) as a sign of professional and sound approach to capital budgeting. However, establishing formal capital documents (e.g. PIP or CIP) can be considered as a “professional” practice only if they lead to tangible capital outcomes such as increased capital, construction, and maintenance spending and higher quality capital stock. Using a suite of qualitative methodologies (including many case studies), this research study will extensively investigate and observe all aspects of sample governments and the way they approach capital budgeting and planning; and only then will it assign “professional” or “unprofessional” values to capital budgeting efforts in the sample governments. Following, parts *a* and *b* of this subsection will elaborate more on the specifics of what is meant by either “professional” or “unprofessional” approaches to municipal capital budgeting in the current research study.

a. Professional Approach to Municipal Capital Budgeting

The literature discusses professional, systematic, and forward-looking municipal capital budgeting in the context of following a set of comprehensive and formal principles (i.e. “best practices”) to maintain an acceptable level of capital and infrastructure stock required for economic development and wellbeing of society (Marlowe, Rivenbark, and Vogt, 2009; Portner, 2011; "Best Practices/Advisories | GFOA", n.d.). The Best Practices/Advisories section of the

Government Finance Officers Association (GFOA) website (accessible at <http://www.gfoa.org/best-practices>) presents a long list of recommendations that are expected of local governments if they want not only to streamline and professionalize their capital budgeting process, but also to maintain and improve the condition of their capital and infrastructure stocks.

Reflecting on the valuable guidelines and recommendations provided by professional organizations such as GFOA and National League of Cities (NLC) and informed by Nunn's (1990) and Pagano's (1984) view of municipal capital budgeting, this research study will develop a more pragmatic definition of professional approach to municipal capital budgeting. Rather than only focusing on availability of certain formal documents (e.g. CIP), this study will define a professional approach to capital budgeting holistically and based on a large number of factors and via a thorough investigation of available sources of data listed in Table I below.

TABLE I: DATA/ITEMS USED IN DEFINING DIFFERENT APPROACHES TO MUNICIPAL CAPITAL BUDGETING

Source of Data	Section/Type	Criteria Measured	Expected Behavior of Different Approaches to Municipal Capital Budgeting	
			Professional/Comprehensive	Unprofessional/Shortsighted
Survey Data	Section A	Overall importance of capital spending relative to operating spending of government	Capital spending is considered relatively important	Capital spending is NOT considered relatively important
	Section B - Questions B1-B2 Annual budgets were also consulted	Whether capital and operational budgeting have separate processes	Separate processes; BUT streamlines together so as not to ignore maintenance items often included in the operating budgets	Either unified budgets, or separate processes but NOT streamlined together
	Section B - Questions B3-B4	Whether capital spending decision-making is a top-down (centralized where decisions are made by the CAO and CFO) or a bottom-up (decentralized where department heads contribute to the decision-making) process.	No preference is given to either form of decision-making and depending on a given situation either type of decision-making may suit these governments.	Neither type of decision-making is really present. Capital decisions in these governments mostly follows an unorganized format where most decisions are made by one person.
	Section B - Question B5	Whether government has a Dedicated Capital Planning Team (DCPT)	Government has a DCPT	No DCPT. Capital decision-making process tends to be a "one-man-job"
	Section B - Questions B11-B16 CIPs were also consulted (where available)	Capital Improvement Plan (CIP) and the quality of it	CIP exists and it is of high quality and is informative	Either no CIP, or if there is a CIP, then it is of very poor quality and uninformative
	Section B - Questions B17-B18 Section C - Question C3-C5 CIPs were also consulted (where available)	Periodic Inspection Plan (PIP) and the quality of it	PIP exists and it is of high quality and is informative	Either no PIP, or if there is a PIP, then it is of very poor quality and uninformative
	Section C - Question C13 Section D - Question D5	Overall importance of industry standards such as GFOA "best practices"	Industry standards important	Not very important
	Section B - Questions B6-B8 Section C - Questions C7, C11-C12 Section D - Question D5	Influence and impacts of the mayor in capital budgeting and decision-making process	Mayor not very influential in the capital budgeting process	Mayor extremely influential in the capital budgeting process
	Section B - Questions B6-B8 Section C - Questions C7, C11-C12 Section D - Question D5	Influence and impacts of the councilmembers in capital budgeting and decision-making process	Councilmembers not very influential in the capital budgeting process	Councilmembers extremely influential in the capital budgeting process
Fiscal/Financial Documents	Annual Budgets	Fiscal transparency in reporting	Annual budget documents very informative and transparent	Not very transparent. Crucial information hard to find/understand for the general public
	CIPs (where available)	Quality of capital plans; whether enough details are provided in the plan	CIP exists and it is of high quality and is informative	Either no CIP, or if there is a CIP, then it is of very poor quality and uninformative
	PIPs (where available)	Quality of maintenance and inspection plans; whether enough details are provided in the plan	PIP exists and it is of high quality and is informative	Either no PIP, or if there is a PIP, then it is of very poor quality and uninformative
Online News Sources	Daily Heralds (among other online news sources)	Overall picture of the governments and their approach to governance	News (where available) paint a positive picture of the government regarding its governance style and approach to problem solving (mostly responses to flooding issues)	News (where available) paint a negative picture of the government regarding its governance style and approach to problem solving (mostly responses to flooding issues)

As table I shows, a very wide range of items both in the attached survey questionnaire and other sources of data are used in investigating whether a municipal government follows a professional or an unprofessional approach to capital budgeting. It is worth noting that the process of assigning outcomes (i.e. Professional/Comprehensive vs. Unprofessional/shortsighted) to each one of the sample governments in this study is a subjective process and I will thoroughly and exhaustively investigate each case and make a subjective decision (based on all the collected data and documents as well as theories and frameworks discussed in this chapter) about whether each sample government has either a professional/comprehensive or unprofessional/shortsighted approach to capital budgeting.

Contrasting the previous literature that considers simply having CIP or other capital documents as a sign of professional and formal approach to capital budgeting, a sample government in this study is considered as having a professional approach to capital budgeting if, for example, it publishes regularly updated and *informative* CIP and PIP, has a separate capital budgeting process that is also streamlined with the operating budgeting, has a dedicated capital planning team (DCPT) where appointed professionals such as the manager, finance director, engineers, and public works directors lead the capital and maintenance discussions, produces transparent and high quality fiscal/budgetary documents that informs both the elected officials and the public, among many other factors listed in table I.

Implementing policies that promote professional approach to municipal capital budgeting has numerous benefits for municipalities that adopt such policies. Although a detailed discussion of benefits associated with all the items listed in table I is beyond the limited space and scope of this chapter, Table II below lists benefits associated with adopting some of the major policies listed in table I.

TABLE II: BENEFITS OF ADOPTING PROFESSIONAL CAPITAL BUDGETING POLICIES

Policy	Benefits for Capital Budgeting	Academic/Prof. Literature Recommending the Policy
Adoption of a multi-year Capital Improvement Program (CIP).	<ul style="list-style-type: none"> • Streamline long-term capital spending/financing procedures. • Decreased capital spending volatility • Decreased debt issuance volatility 	<ul style="list-style-type: none"> • GFOA • ICMA (Bland, 2013) • ICMA (Marlowe et al, 2009) • Portner (2011) • Doss (1987)
Adoption of a separate capital budget (SCB) and separating capital budget process from operating budget process.	<ul style="list-style-type: none"> • Streamline the decision-making process • Increase the likelihood that capital projects get underway on a timely manner • Secure financing (pay-go and pay-use) for new capital and maintenance expenditures for the upcoming fiscal year • Make sure that capital projects get the attention they deserve and won't get sacrificed for balancing the operational budget. 	<ul style="list-style-type: none"> • GFOA • ICMA (Bland, 2013) • ICMA (Marlowe et al., 2009) • Afonso (2014) • Portner (2011) • Doss (1987) • Chung (2013) • Mikesell (2003)
Adoption of a Periodic Inspection Program (PIP), a capital asset management program, or a similar program.	<ul style="list-style-type: none"> • More accurate assessment of the physical conditions of capital facilities • Ability to appropriately plan and budget for any capital maintenance and replacement needs 	<ul style="list-style-type: none"> • GFOA • ICMA (Marlowe et al., 2009) • Halachmi and Sekwat (1997) • Doss (1987)
Establishing a dedicated professional capital planning team (DCPT).	<ul style="list-style-type: none"> • Streamline long-term capital spending/financing decisions • Less political and more professional capital budgeting • Decreased capital spending volatility • Decreased debt issuance volatility 	<ul style="list-style-type: none"> • GFOA • ICMA (Bland, 2013) • ICMA (Marlowe et al., 2009)

As listed in Table II, a government that adopts an informative capital improvement plan (CIP), will experience less capital spending and financing volatilities over a long-term period. This is mainly because long-term capital planning and budgeting lets governments have a better vision of capital/maintenance spending needs in the future and they will be better able to secure dedicated capital financing sources (i.e. balanced debt/tax composition; Portner, 2011) for both short and long-term periods. Similarly, adoption of an informative periodic inspection plan (PIP) and/or other similar capital asset management plans can help governments assess the physical conditions of their capital facilities more accurately and budget for any capital maintenance and replacement needs on a timely fashion and more appropriately.

Adopting a separate capital budgeting process (SCB) that is also streamlined and linked to the operating budget process helps governments ensure that capital/maintenance projects get the spotlight they deserve and will not get eliminated – or at best decreased – by public officials in order to balance the operating budget. As Moak and Hillhouse (1975) put it, “*in a unified budget, the investments in capital projects look relatively expensive due to lumpy cost charges, thus generating a bias in allocating resources*”. Also, adoption of a SCB helps a municipal government streamline capital budgeting process, commit a certain number of resources for capital/maintenance projects throughout the following fiscal year, and provide a timeline of when certain projects will be undertaken, among other benefits (Bunch, 1996).

Academic and professional “best practice” recommendations also recognize that governments that establish a dedicated capital planning team (DCPT) are better able to professionally manage capital outlays, capital debt, and maintenance plans. Additionally, these governments are able to lower the impacts of political considerations on capital spending and financing plans and therefore increase capital efficiency in long term (Weingast, Shepsle, and Johnsen, 1981). Despite all the mentioned professional capital budgeting recommendations, the consensus in the literature is that most governments, unfortunately, tend to have a shortsighted and unprofessional approach to capital budgeting (Nunn, 1990; Forrester, 1993). The next part will discuss unprofessional/political approach to capital budgeting.

b. Unprofessional Approach to Municipal Capital Budgeting

Governments with an *unprofessional* approach to capital budgeting have certain behaviors in common as table I illustrates. For instance, these governments often do not have a long-term vision of capital spending/budgeting and suffer from what is known as the “proximal investment” problem. This problem is a tendency to focus capital resources on new and visible

capital projects at the cost of less visible maintenance of existing projects. This occurs because new projects deliver tangible outcomes for taxpayers and provides “ribbon-cutting” opportunities for elected officials, among other political gains (Marlowe, 2013).

As another example, municipalities with an unprofessional approach to capital budgeting have either a unified budget or a separate capital budget that is not synchronized with and linked to the operating budget. The problem with a separate capital budget (that is not synchronized and linked to operating budget) is that maintenance items are often separated from capital discussions since they are included in the operating budget due to their small dollar values. Therefore, when capital and operating budget processes are separated and not linked together, maintenance items become “sacrificial lambs” for more urgent operating expenses, particularly during fiscal downturns when across-the-board cuts are common (Pagano, 1984).

The problem with a unified budget is that capital projects will not receive the adequate attention they deserve and the operating budget that contains crucial city services, such as police and fire protection, usually overshadows the capital budget. Additionally, higher costs and expenses associated with capital projects make them less appealing for resource allocation purposes if grouped together with less expensive operating categories of spending in a unified budget. In a unified budget, capital project investments may look expensive due to “lumpy” costs (relative to less costly operating expenses), thus generating a bias in allocating resources.

Governments with unprofessional approach to capital budgeting also seem to suffer from shortsighted and political interventions and interruptions in capital budgeting due to lack of a dedicated capital planning team led by professional appointees. Often, capital budgeting in these governments is a one-person-job heavily influenced by political intentions of elected officials. Literature in distributive policymaking argues that public *elected* officials, unlike *appointed*

officials, have reasons to engage in political activities to boost their reelection bids. For instance, an elected mayor is more likely – than, let’s say, an appointed manager – to have a short-sighted view of budgeting (both operating and capital). These elected officials often care more about short term goals as these goals have a much more effect on their reelection bids than mid- to long-term goals have. Governments that do not have a functioning DCPT frequently fall into the traps of shortsighted capital budget spending, motivated by “pork barrel” politics and political intentions of elected officials. Srithongrung (2008) maintains that “*an objective and systematic budget process will treat capital investment as a tool to shape the community, while nonsystematic budget processes typically found in communities that have a dominant political institution treat the capital budget as a political asset*” (p. 91).

2. Factors Affecting Approach to Municipal Capital Budgeting

From among all the factors in the model in Figure 1, there are a total of five factors that are expected to impact a municipal government’s approach to capital budgeting. These five factors are size, wealth, growth, land-use, and institutional form of government and are listed and discussed in table III below. Using a sample of thirty-two Illinois municipal governments with populations more than five-thousand and a suite of qualitative methodologies (case-study and qualitative comparative analyses), the first research question investigates the causal relationships of these five factors on the approach to municipal capital budgeting.

TABLE III: FIVE VARIABLES OF INTEREST AFFECTING APPROACH TO MUNICIPAL CAPITAL BUDGETING

Variable	Construct Measured	Categories	Data Source
Form of Council: (At-large vs. Ward) Form of CAO: (Admin. vs. Manager vs. Strong Mayor)	Form of Government	Manager / At-large Administrator / At-large Manager / Ward Administrator / Ward Strong Mayor / Ward	Survey Questionnaire
Population Change 2000-17	Government Growth	Less than -7% Between -7% and 7% Between 7% and 30% Greater than 30%	Census of Government
Median Household Income 2017	Government Wealth	Less than \$61,000 Between \$61,000 and \$90,000 Greater than \$90,000	Census of Government
Percent Residential Areas	Land Use policy in an community	Less than 70% Between 70% and 85% Greater than 85%	Illinois' Comptrollers Office (IOC)
2017 Operational Spending	Government Size	Less than \$10 Million Between \$10 and \$25 Million Between \$25 and \$75 Million Greater than \$75 Million	Census of Government

From among the external factors in figure 1, the following 4 factors are not included in the analysis that investigates the first research question: *state rules/regulations, cycle of economy, level of development, and state/federal grants*. Statewide rules and regulations (e.g. tax and expenditure limitations) can have long-term effects on approach to capital budgeting, but are controlled in the current analysis and therefore, not included in table III. Specifically, I examine only Illinois municipalities to control for this impactful variable. Years of declining federal grants and the nationwide tax revolts of late 1970s led states to implement many different forms of state and local TELs (e.g. Proposition 13 of California, TABOR of Colorado, and Proposition 2 ½ percent of Massachusetts) and left municipal governments with declining revenue base and tied their hands in raising enough revenue for capital purposes (Hackbart and Ramsey, 1992). Due to their enormous impact on municipal capital budgeting and spending decisions, as well as variations in policies and implementations across different states, this major exogenous factor will be controlled in the current study.

Aside from statewide rules/regulations (that will be controlled in both the first and the second research analyses), the other three factors (i.e. *cycle of economy*, *level of development*, and *state/federal grants*) are omitted from the first analysis because these factors tend to impact other internal subsystems that are expected to affect capital and maintenance spending levels.

Unlike other external factors, the cycle of economy can significantly affect a municipality's short-term fiscal condition and fund reserves. Level of community development can shape a government's approach to economic development which, then, can lead to change in capital/maintenance spending. Federal/state grants can significantly shape the pool of funds available for capital spending from year to year. As can be seen, all three variables tend to impact other internal subsystems which, in turn, can affect capital spending levels and not the approach to capital budgeting. The next few paragraphs will discuss the reasons why it is expected that the five variables of interest (listed in table III) impact approach to municipal capital budgeting.

Population growth rate and land use can be good indicators of the capital demand levels in a jurisdiction. Using a panel data set consisting of state-specific observations over the 2000 to 2010 period (excluding years 2001 and 2003), Fisher and Wassmer (2015) found that higher population growth can significantly drive up the demand for capital in the states that experienced population growth. Choudhury, Clingermayer, and Dasse (2003), using data for forty-nine states (excluding Nebraska) during the 1977-1983 period, similarly found state population change to have a statistically significant positive impact on demand for capital.

A city that has experienced a high level of population growth in the past is more likely to experience higher capital demands for services such as water, sewer, and solid waste disposal, but this impact is likely to be lagged rather than immediate. Governments that experience

population growth do not change their approach to capital budgeting immediately. Rather, these governments acclimate to increasing capital demand (as a result of increased population) over a longer period of time. Similarly, a more residential government (also referred to as “bedroom” communities) can have higher capital demand in a jurisdiction due to the higher number of households living in such communities who may have high levels of demand for core infrastructures such as electricity, water, sewer, and solid waste disposal.

Higher demand for such capital facilities in higher residential or growing communities consequently impacts the way these governments approach capital budgeting in order to meet the increased demand for capital. Chen and Bartle (2017) observed that during the 1972-2012 period roads, water, sewer, transit, solid waste management, and electricity received the highest attention in local governments in the U.S. Therefore, both population growth rate and level of residentialness are important factors that can significantly increase demand for core capital facilities as well as shape and impact capital budgeting and planning endeavors in governments.

Median household income is also included as a causal factor in the first analysis because it is a very good indicator of the level of wealth and taxpaying power of the community. Governments in wealthier communities, with higher paid residents, have access to more stable and reliable tax revenue sources, allowing them to provide a higher quality infrastructure for the whole community (Chung, 2013). Considering that having access to higher and more reliable revenue sources can significantly influence governments’ approach to capital budgeting, this causal factor is also included in the current research study.

Another reason for including median household income in the first analysis is that research finds that it could be considered as a reliable measure of long-term fiscal condition of a government (Berne and Schramm, 1986). Long-term fiscal condition can have significant

impacts on how governments approach capital budgeting. A government that has structural deficit and constantly struggles with balancing its budgets is much less likely (than a wealthier government) to meet its capital/construction demands and usually resorts in postponing capital/maintenance spending (perpetually) in order to balance the operating budgets that is more visible and immediate. Therefore, this study will include median household income as a measure of community wealth and long-term fiscal condition in the analysis.

The size of government has been shown – by the prior research – to impact a government's approach to capital budgeting. Using International City/County Management Association (ICMA) survey data on 1,374 U.S. cities with populations more than ten-thousand, Doss (1987) found a strong and statistically significant association between population size and likelihood of adopting a separate capital budgeting (SCB) by the government. More populated cities, the author found, are more likely to adopt a SCB. Sekwat (1999) found similar results. Studying a sample of municipal governments in the state of Tennessee, the author observed that governments that have populations more than fifty thousand are more likely to adopt a capital improvement plan (CIP) or a SCB.

Logically, the expectation is that larger governments are more likely to adopt formal capital budgeting documents such as SCB, CIP, and PIP, as evidenced by the prior research. Larger governments have more fiscal and administrative capacities, enabling them to perform capital budgeting in a more organized and formal manner. Smaller governments, in contrast, tend to have less manpower and administrative capacity to perform any meaningful capital demand analysis that is needed for an informative CIP, or to properly investigate the quality of capital assets on a regular basis that is needed for a PIP. Additionally, given their limited fiscal capacities, these smaller governments tend to have a unified budgeting process where their

limited resources are pooled together and allocated between competing operating and capital items. Therefore, they are also less likely to have a SCB.

Given the aforementioned empirical evidence – that adoption of SCB, CIP, and PIP is more common among larger size governments – this research study will also include a measure of government size in examination of approach to municipal capital budgeting and planning. Unlike prior research, however, this study will use operational spending and not the population as a measure of government size. This decision was made because operational spending provides a truer picture of government size relative to other governments in the sample because jurisdiction population underrepresents municipal governments with low residential land use. Using 2017 operational spending values, I expect that higher operating size and capacity positively affects a sample government's approach to capital budgeting and planning.

Last but certainly not least, form of government is also included as a factor in this first analysis. A thorough review of the literature reveals inconclusive and contradicting findings for the impacts of form of government on total public spending (Carr, 2015). The literature is filled with studies investigating such causal relationship; some found the council-manager form to have less public spending per-capita than mayor-council form (Stumm and Corigan, 1998; Booms, 1966), while others found the opposite to be the case (Coate and Knight, 2011; French, 2003; French, 2004). Yet, there are others who found no significant difference in spending levels between these two groups of government (Deno and Mehay, 1987).

Carr and Karuppusamy (2010) explain that this inconclusiveness in the research as demonstrated by aforementioned contradictory and null findings is because form of government is measured inappropriately. Despite the common view that municipal structures are increasingly complex, many scholars continue to utilize a simple dichotomy of form of government (i.e.

mayor-council vs. council-manager) in their research. The gap between government institutional structures in reality and the simplistic and dichotomous measures used in previous research limits our knowledge of the impacts of form of government on total public spending and can explain the null findings in prior research.

Little research exists that investigates the impacts of form of government on only *capital* spending (rather than total public spending discussed above). Both Nunn (1996) and Wang and Wu (2018) used a dichotomous form of government in their research designs and found that the council-manager form is associated with higher per-capita capital spending. Unfortunately, both studies define form of government based on a simplistic dichotomous format that was criticized earlier.

The current research study agrees with Carr and Karuppusamy's (2010) argument that academic investigations of form of government should reflect the reality of governments with more complex structures than a simplistic dichotomy suggests. Here, I measure form of government (characterized by various types of CAOs and forms of council, as chapter 3 explains) using 5-categories to investigate the causal relationship between form of government and approach to municipal capital budgeting.

a. Complementarity Model of Politics-Administration Relationship and Adapted-City Framework

For a long time, the literature related to studies of governments was informed by a “clear cut” separation of politics and administration. This “orthodoxy” school of thought is known as “politics-administration” dichotomy in the literature. Svvara (1985), among other scholars of the time, heavily criticized the notion of “dichotomy” and presented his own vision, called the “*Complementarity*” model of politics-administration relationship. Contrasting the clear-cut division of labor between politicians and administrators envisioned by the orthodoxy school of

thought, Svara's model depicts a government where the council members and the administrators complement each other's tasks, and boundaries of their activities and responsibilities are increasingly blurred.

Following this notion of "blurring" of the boundaries between politics and administration spheres – and acknowledging the fact that municipal governments throughout the nation are shifting their forms to better adapt to their everchanging political, fiscal, and economic situations (DeSantis and Renner, 2002) – George Frederickson, Gary Johnson, and Curtis Wood proposed a new classification of form of government that reflects the merging of mayor-council and council-manager forms (Carr and Karuppusamy; 2008; Nelson and Svara, 2010; Eskridge and French, 2011). Frederickson and Johnson (2001) and Frederickson et al (2004) argue that over time cities with mayor-council statutory structures will increasingly adapt many of the features of council-manager forms to improve their management and productivity capabilities, while many council-manager governments will adopt characteristics of mayoral cities to increase their political responsiveness. Because each one of the two legal forms of government adopts features of the other, these cities now represent a third form of government – the *adapted city*.

A key conclusion of this literature is that the two traditional forms of government (i.e. mayor-council and council-manager) no longer accurately describe the structures of most municipal governments in the United States. Carr and Karuppusamy (2009) examined the charter forms of 263 cities in the state of Michigan (using the "adapted city" framework) and observed that the governance structure in most Michigan cities is not adequately described by the two traditional forms of government. Their study lays support to the adapted city framework advanced by Frederickson et al (2004).

Informed by both James Svara's Complementarity model of politics-administration and Frederickson's et al notion of adapted city framework, the current research study departs from previous studies – that only assumed a simplistic dichotomous form of government and a clear-cut division of labor between administrators and politicians – and will classify form of government based on the actors (public officials) who are most likely to affect a government's approach to municipal capital planning and budgeting. Specifically, this study will classify form of government based on 1) type of the CAO which could be any of manager, administrator, or a strong mayor; and 2) type of the council that could be either at-large or ward-system. By using a 5-category institutional form of government, this research study will become the first in the literature to have investigated the causal relationship between institutional form of government and approach to municipal capital budgeting using more than a simplistic binary form of government.

Defining institutional form of government based on the type of CAO and the form of the council is especially suitable in the current study because I am investigating capital budgeting behavior of municipal governments. The literature in *Distributive Policymaking* explains the “political” nature of capital budgeting and how different types of elected officials engage in what is known as “pork barrel” politics, i.e. sending targetable benefits to their constituencies in hope of securing elected office. Defining form of government based on the type of council and CAO can help this research study investigate which types of public officials, and in what institutional arrangements, impact capital budgeting behaviors of sample government. Next, part b reviews the literature in *Distributive Policymaking*.

b. Distributive Policymaking

Distributive policymaking framework explains the interaction between self-interested incumbents and their constituencies. A distributive policy is a political decision with the intention of concentrating benefits to a specific group of constituents, while financing expenditures through generalized taxation (Weingast et al, 1981). Distributive policymaking framework maintains that public elected officials try to distribute targetable benefits (i.e. “pork-barrel” projects) to their constituencies, especially during election years, in pursuit of personal electoral benefits (Crain and Oakley, 1995; Choudhury et. al., 2003; MacManus, 2004).

Empirical evidence supports the distributive policymaking framework and capital budgeting, and spending seems to be the one aspect of government most affected by political intentions of incumbents. Using data on 32 Mexican federal units from 1990 through 1995, Costa-I-Font, Rodriguez-Oreggia, and Lunapla (2003) found support for the “pork-barrel” politics hypothesis and observed a positive association between allocation of public investment and degree of support for incumbents during election. Dalenberg and Duffy-Deno (1991) hold that the local public good whose provision is most affected by political intentions of incumbents is public infrastructure. Using data on 30 large U.S. cities during 1960-1981 period, the authors found that governments do, in fact, increase infrastructure spending during elections and in years immediately preceding an election.

Municipalities with different institutional arrangements are expected to behave differently in making capital decisions largely because different public officials (elected and appointed) are driven by different sets of motives, which can significantly change their impacts on approach to municipal capital budgeting. Based on the Distributive Policymaking framework, mayors tend more (than professional appointees) to be engaged in political activities in capital

budgeting. Unlike mayors who are elected directly by the public and have all the political motivations to engage in “pork-barrel” politics for electoral gains, managers and administrators, who hold office based on appointment, are more likely to treat capital budgets and decisions in an efficient and professional way, as their job security depends on achieving fiscal goals set by the council.

Research in this area also shows that incumbents in different council forms (i.e. at-large vs. ward-system) approach capital budgeting differently and with different political intentions. Councilmembers in aldermanic council systems tend more (than at-large councilmembers) to be engaged in “pork barrel” politics. while at-large councilmembers are concerned with the needs of all constituencies across the whole jurisdiction, ward alderpersons try to appeal to constituencies within a specific electoral district. Alderpersons seek reelection within individual districts, which motivates them to engage in a non-professional pork-barrel politics in order to boost their reelection bids. The result of such pork-barrel politics is that *“benefits are geographically targeted whereas the costs are dispersed through general taxation”* (Lancaster, 1986; p. 69).

Dalenberg and Duffy-Deno (1991) observed that the magnitude of political and shortsighted behavior is larger among ward-system aldermen than among at-large councilmembers. This is largely because ward election systems provide a greater incentive for pork-barrel politics than at-large election systems do. Ward incumbents *“rely on neighborhood loyalties for their re-election. Thus, they are interested in providing public services whose benefits are geographically concentrated but whose costs are spread city-wide”* (p. 335). At-large incumbents, on the other hand, are more concerned with city-wide benefits, as their constituency is city-wide.

C. Municipal Capital/Maintenance Spending

This third and final section of the chapter will review factors and literature related to the second research question discussed in chapter one. While the first research analysis provides an overview of *how* sample governments approach capital budgeting, the second research analysis investigates whether sample governments with different approaches to capital budgeting invest in capital and maintenance categories differently. Specifically, the second research question enquires about the potential impacts that different approach to capital budgeting may have on the levels of capital and maintenance spending in the sample communities.

The remainder of this section is divided into two subsections. First, subsection 1 will briefly discuss municipal capital/maintenance spending and how this variable (which will be the dependent variable in the second research analysis) will be defined and measured in this study. Next, subsection 2 will elaborate on five variables of interest (i.e. approach to capital budgeting, capital financing through debt, capital financing through grants, approach to economic development, and short-term fiscal condition) that this research study expects to impact and influence capital and maintenance spending levels among the sample municipal governments.

1. Capital/Maintenance Spending as Dependent Variable

Total capital and maintenance spending is the dependent variable in the second research analysis in this study. This variable is operationalized and measured as a percentage of operational spending. Although most other studies measure capital spending per resident within a jurisdiction (i.e. per capita), I decided to use operational spending sizes instead of population as the denominator in order to avoid underrepresenting highly residential sample communities. The sample of governments selected for this study have various degrees of residentialness and

because residential communities tend to be more populated, then using per-capita values would have biased the results toward less populated communities.

Additionally, due to highly volatile nature of capital/maintenance spending among small local governments, rather than just one year, I will investigate the average of three years (2017-2019) of capital and maintenance spending among the sample governments. Some of the sample governments may not even spend a single dollar on capital/maintenance during some years as they may not have any capital needs for those particular years. Some other sample governments may spend a large amount of money in a given year on a single capital item (e.g. reconstructing a falling bridge). Therefore, averaging three years' worth of capital/maintenance spending for each government would provide a more realistic picture of their capital and maintenance spending during a given fiscal year. Next, subsection 2 will review the literature as it relates to the factors that are expected to impact level of capital/maintenance spending among the sample governments.

2. Factors Affecting Municipal Capital/Maintenance Spending

The second research question investigates the potential impacts of the approach to municipal capital budgeting on levels of capital and maintenance spending among the sample governments. Therefore, approach to municipal capital budgeting – that was the dependent variable in the first research analysis – will now be the main explanatory variable in the second analysis. However, capital and maintenance spending levels are affected by more than just approach to municipal capital budgeting. As table IV lists below, there are a total of five variables that can affect how much a sample government spends on capital and maintenance items.

TABLE IV: FIVE VARIABLE OF INTEREST AFFECTING LEVEL OF CAPITAL/CONSTRUCTION SPENDING

Variable	Construct Measured	Categories	Data Source
Approach to Municipal Capital Budgeting	Approach to Municipal Capital Budgeting	1= Professional 0= Unprofessional	The results of the first research question
Fund Balance as a Percentage of Operating Spending (Average of 2017,2018,2019)	Short-Term Fiscal Condition	Very Bad = Less Than 42% of Operating Spending Medium = Between 42% and 83% of Operating Spending Very Good = More than 83% of Operating Spending	Illinois' Comptrollers Office (IOC)
Extent to which gov't uses <u>debt</u> for capital financing	Preferred Method of Capital Financing	1= Debt is Preferred over Fund Reserves 0= Debt is NOT Preferred over Fund Reserves	Survey Data
Extent to which gov't uses <u>grants</u> for capital financing	Preferred Method of Capital Financing	1= Grants important in making capital decisions 0= Grants NOT important in making capital decisions	Survey Data
Importance of Economic Development	Approach to Economic Development	1= Economic Development Very Important 0= Economic Development NOT very Important	Survey Data

All of these variables (that are also included in the model in figure 1) tend to have short term effects on capital spending and are expected to impact capital spending that is also of short-term nature. Following, the literature related to each variable is reviewed and the reason for why they are expected to have an effect on capital and maintenance spending is discussed.

Short-term fiscal condition can influence and impact the levels of capital and maintenance spending in municipal governments. Economic downturns are considered as a major factor that can deteriorate fiscal health of municipalities in the short-run and often governments with weakened fiscal reserves let go of their capital/maintenance spending and focus their limited resources on more urgent operating spending. Empirical evidence suggests that governments in fiscal distress (often resulted from economic shocks) cut/postpone their capital/maintenance spending before cutting other expenditures. This is largely because fiscally troubled governments that experience sharp declines in their fiscal reserves and revenue capacities find it challenging to keep their basic services (such as police, fire, and public health) at an acceptable level; and so are more prone to cut “less visible” capital and maintenance programs (Bell, Brunori, Henson’s et al, 2006) in order to focus all resources on more urgent matters such as the operating budget.

Numerous studies found that governments at both state and local level take a rather reactive approach in capital budgeting and such spending follows a cyclical pattern with respect to the cycle of economy. When approaching an economic downturn, most governments cut capital projects and postpone maintenance spending. Afonso (2014) surveyed thirty-nine Georgia and thirty-five California county commissioners in the winter of 2010 and found that the Great Recession of 2008 caused eighty-eight percent of these governments to cut capital projects. The author found that delaying or canceling capital projects was the most frequently used alternative (among surveyed governments) in responding to the shock of the Great Recession, followed by hiring freezes (78%), reducing employee benefits (53%), and introducing furloughs (47%).

Pagano (2002) observed that municipal capital spending mostly follows a cyclical pattern with respect to the business cycle. In other words, greater-than-expected revenues during the boom years, the author observed, allowed many municipal governments to move capital projects from long-term capital plans into annual capital budgets. During economic downturns, on the other hand, governments were found to decrease capital and maintenance spending. This is largely because during recessions most governments face fiscal hardship as their tax revenue capacities and federal and state aids (two largest sources of local revenues) significantly decline (Bates and Santerre, 2015), and tend to cut back on capital and maintenance spending in order to sustain service delivery levels via operational spending.

Using maintenance and investment data on 2,307 Norwegian local governments during the 2008-2013 period, Borge and Hopland (2015) similarly found that both maintenance and investment expenditures are sensitive to overall fiscal health of the government and that these “easy target” expenditures were among the first categories being cut back when governments needed to deal with the shock of the Great Recession and adjust budgets.

Approach to Economic Development can also impact capital spending levels. It is expected that governments that put more focus on their economic development also spend more on capital and maintenance. Sample governments selected for this research study have different levels of community development and the expectation is that their level of development impacts how much emphasis they put on economic development. Considering that research shows strong relationship between level of capital spending and economic development (Munnell, 1990; Afonso, 2014; Lombard, Sinha, and Brown, 1992; Srithongrung, 2008), the second research analysis includes and expects that approach to economic development will have a meaningful and significant impact on capital and maintenance spending decisions.

Another important factor that can significantly impact capital/maintenance spending levels is the amount of intergovernmental aid that municipal governments receive. This study expects that availability of capital funding from grants to influence capital spending decisions of sample governments, reflected in their levels of capital/maintenance spending. Investigating a sample of 31 largest U.S. municipal governments during the 1964 through 1989 period, Eberts and Fox (1992) found that federal intergovernmental aids and grants do have a statistically significant impact on the level of infrastructure spending in the sample governments. Similarly, Bates and Santerre (2015), using a panel dataset of Connecticut towns and cities during the 2000 to 2010 period, found intergovernmental grants to be an important factor determining capital investment spending.

As was briefly discussed earlier, years of declining federal aids combined with the introduction of numerous types of statewide tax and expenditure limitations (TEL) during the last few decades of the twentieth century left municipal governments with shrinking tax base and more need for other alternatives for capital financing. Consequently, the availability of grants for

capital financing has grown in importance among municipal governments. Therefore, a measure of capital financing through intergovernmental aids and grants will be included in the second research analysis in this study.

Last but not least, willingness to borrow for capital can significantly impact capital spending decisions. Research shows that governments that are more willing to issue debt also tend to have higher capital spending. Temple (1994), using spending data on forty-eight contiguous states for 1983 and 1984, found that states with higher per-capita capital spending tend to fund a greater share of their capital spending through borrowing and debt issuance. Similarly, Poterba (1995) investigated state non-highway capital spending for the forty-eight contiguous states in 1962 and found that states that do not have Pay-As-You-Go (i.e. own-source financing) requirements for capital financing tend to have higher spending levels. In other words, Poterba finds that state governments that are allowed to issue debt (i.e. Pay-As-You-Use) for financing capital tend to invest more on their capital infrastructure.

Considering that more willingness to issue debt is related to higher investment in capital (as the prior research shows), this study will also include a measure of willingness to issue debt as capital financing method in the second research analysis. Together, the five variables listed in table IV provide a very good combination of factors that can significantly influence sample governments' capital and maintenance spending decisions. Next, chapter 3 will explore the research design, sampling method, and specific methodologies that will be used in the current research study.

III. RESEARCH METHODOLOGY

This chapter will discuss the research design and methodology used in the current research study. The chapter is divided into four sections. First, the research setting and the procedure by which the cases were selected for case study and qualitative comparative analysis (QCA) are discussed. Second, data collection methods, in general, and interview questionnaire, in specific, are discussed, followed by a brief analysis of participants in the interview in section three. The fourth, and final, section of the chapter will shed light on the specifics of analytical strategies used in this study, namely case-study and qualitative comparative analysis (QCA).

A. Research Setting and Selection of Cases

This research study applies a three-stage hierarchical sampling technique in selecting cases for case-study and QCA analysis. In order to keep cross-state variables – such as state Tax and Expenditure Limitations (TEL) – constant, this research study will only focus on municipal governments in the state of Illinois.

From a total of 1299 municipal governments in Illinois, 99 governments are selected in the sampling frame for this research study. These 99 cases are selected into the sampling frame (using a three-stage hierarchical sampling discussed in detail below) such that they have various forms of government and have high or low values for the additional four variables that I am investigating. As discussed in chapter 2, the four variables (in addition to the form of government) are 2017 operating spending size, 2017 median household income, 2000-17 population growth rate, and residentialness of the government.

Using the sampling frame, 32 cases are then carefully selected for both case-study and QCA analysis. As chapter 2 explained, these five variables are selected for analysis due to their significant influence on municipal capital budgeting (as evidenced by the prior literature). Together, these five variables provide a good mixture of internal and external factors that (as figure 1 in chapter 2 demonstrated) can affect approach to capital budgeting and, therefore, are considered for both selection of cases and QCA and case-study analyses in the current study.

Unlike a quantitative analysis where the selection of cases is random, selection of cases in a qualitative process of inquiry is deliberate and nonrandom. Cases are selected for a qualitative analysis based on their intrinsic characteristics and the process of case selection is a subjective and an essential phase of any qualitative analysis. Berg-Schlosser (2012) elaborates on two opposite strategies for case selection in a qualitative inquiry: Most Similar cases but Different Outcomes (MSDO) and Most Different cases but Same Outcome (MDSO). The latter strategy (i.e. MDSO) is used when the goal of inquiry is maximizing heterogeneity among the sample cases because it is believed that despite the inter-systemic differentiations, cases with different characteristics all link to an identical outcome.

The former strategy, on the other hand, is employed when the investigator believes that *“a number of theoretically significant differences will be found among similar cases and systems”* (Berg-Schlosser, 2012; p. 35); and that by selecting cases as similar to each other as possible, most of the variables can be controlled. By selecting cases with similar statutory forms (i.e. all municipal governments) and within the same state (i.e. Illinois) that have different approaches to municipal capital budgeting (i.e. different outcomes) the current research study implements MSDO strategy for qualitative case selection in order to control the impacts of inter-state rules/regulations on approach to municipal capital budgeting.

Because the choice of cases in the sample is so crucial to qualitative investigation, I used a manual hierarchical sampling method and carefully selected 32 governments for this research. In selecting these 32 governments, three criteria are considered. *First*, selected governments are all relatively large municipalities (with more than five thousand in 2017 population) because smaller governments (with populations below five thousand) tend to have an ad-hoc approach to capital budgeting due to their limited resources and capacities and, therefore, not suitable for this analysis. *Second*, these 32 governments have some of the most common institutional arrangements among Illinois municipalities. *Finally*, all sample governments have either high or low levels of some of the factors I am investigating (e.g. residentialness, growth, wealth, and size of government). I expect that the impacts of these variables can best be observed in the extremes of the distribution.

I used a hierarchical sampling technique that has three levels corresponding to the three criteria mentioned above. First, 656 governments with 2017 populations more than one thousand were selected (from a total of 1299 Illinois municipalities). Second, the resulting 656 governments were clustered based on their form of council (at-large vs. ward-system) and type of CAO (manager vs. administrator vs. strong mayor), and 356 cases in groups with very small governments were dropped and 300 governments (from groups with larger sized governments) remained in the sample. Finally, the remaining 300 governments were analyzed based on the four other variables I am using to sample cases (i.e. residentialness, growth, wealth, and size of government) and 99 governments that have high or low values for these variables were kept in the sample while 201 governments that have medium values for these four variables were dropped from the sample. The remaining 99 governments were then clustered into 24 various groups based on the four variables mentioned above, and a total of 32 governments were

carefully selected for case-study and Qualitative Comparative Analysis (QCA). Following, each one of the three levels of hierarchical sampling and the resulting sampling frame are explained in detail.

There are a total of 1299 municipal governments in the state of Illinois. 656 of these governments have a 2017 population more than one thousand. Governments with populations below one thousand were dropped from the sampling frame in the first stage of hierarchical sampling. My reasoning is that these governments generally do not have the fiscal and administrative capacity for formal/comprehensive budgeting and, often, approach capital budgeting on ad-hoc basis. Thus, there may be little variation on budgeting processes for these governments.

In the second stage of the hierarchical sampling, I clustered these 656 governments into seven groups based on their institutional arrangement and form of government, and I removed two groups of cases from the sampling frame in which the jurisdictions were relatively small. Specifically, I grouped the governments based on form of council (at-large vs ward), and type of CAO (mayor vs administrator vs manager). I used these variables to group governments at this stage of the sampling process since they are likely to be very critical to the answers to my research questions discussed in chapter 1.

As was discussed in detail in chapter 2, institutional form of governments is expected to have a very significant impact on municipal capital budgeting and decision-making. Therefore, clustering these 656 governments based on form of council and CAO at this second stage of hierarchical sampling reveals which forms of government are the most common among Illinois municipalities with populations more than one thousand. Clustering the 656 governments based on form of council and CAO guarantees that enough cases with various forms of government are

represented in the final sampling frame. Additionally, and as Table V illustrates, clustering these 656 governments based on their form of council and CAO helps the next stage of hierarchical sampling to only focus on groups of governments with relatively large 2017 median population sizes.

TABLE V: IL GOVERNMENTS STRUCTURAL FEATURES (MEDIAN 2017 VALUES)

Form of Council (Ward/At-large)	Form of Gov't	CAO Type	GROUP	Number of Gov'ts	2017 Population	2000-17 % Pop Change	2017 Income per Capita	2017 Median Household Income	% Mgr and Prof. Population	2017 Operational Spending ('000 USD)	% Residential	% Commercial	% Industrial	EA V per Square Mile ('000 USD)	% Urban (vs. Rural)	% Home Rule	Poverty
At-large	Council- Mgr	Manager	1	92	19,095	1.94	34,293	74,269	41.55	28,023	79.1	13.24	2.54	135,000	96.74	55.43	5.95
	Weak Mayor- Council	Administrator	2	96	8,189	16.20	35,400	78,342	38.45	7,891	81.45	12.14	2.41	43,200	93.75	33.33	3.9
		Mayor/Pres.	too small	259	2,048	3.76	26,547	54,750	28.3	1,627	80.96	12.86	1.1	18,000	59.85	16.6	8.3
Ward	Council- Mgr	Manager	3	24	38,185	2.70	31,551	63,931	37.6	54,982	70.7	18.27	3.58	123,000	100	79.17	8.85
	Weak Mayor- Council	Administrator	4	52	8,955	4.16	27,178	54,124	28.7	9,696	74.57	18.41	3.32	24,700	90.38	32.69	8.35
		Weak Mayor	too small	97	2,640	-4.33	23,797	45,047	26.2	2,161	75.96	17.9	1.49	13,300	62.88	15.46	12
	Strong Mayor- Council	Strong Mayor	5	36	12,597	0.07	23,658	44,356	28.9	18,148	71.31	20.99	2.57	21,400	97.22	52.78	12.65
Total # of cases				656													

* Data for types of council and CAO, as well as form of government collected from county clerk offices throughout Illinois and official government websites.

** All demographic and fiscal/financial data is from the 2017 Census of government database.

*** Data related to Property Assessed Values and percentages collected from 2016 Illinois Office of the Comptroller (IOC).

Table V categorizes 656 Illinois municipalities (with 2017 populations more than one thousand) into seven groups based on their form of council (ward vs. at-large) and form of CAO (manager vs. administrator vs. mayor). Based on the table, the two groups that are indicated by “*too small*” are relatively very small, both in terms of 2017 populations and operational spending sizes. As was discussed before, the expectation is that smaller governments tend to have an unprofessional and informal approach to capital budgeting due to their limited administrative and fiscal capacities. Therefore, these two groups were dropped from the sampling frame.

Cases within the five groups (indicated by numbers 1 through 5 in table V) that contain relatively larger jurisdictions compared to the other two groups were left in the sampling frame at this stage. These five groups, which are listed below, have 300 cases combined and are used in this study to investigate the impact of institutional arrangement and form of government on the answers to my two research questions discussed in chapter 1.

Group 1: Manager as CAO and an at-large form of council

Group 2: Administrator as CAO and an at-large form of council

Group 3: Manager as CAO and a ward-system council

Group 4: Administrator as CAO and a ward-system council

Group 5: Strong mayor as CAO and a ward-system council

From a total of 116 managerial governments in table V, 92 municipalities have at-large form of council while 24 governments have ward-system boards. Interestingly, these managerial municipalities have, by far, the highest levels of equalized assessed valuations (EAV) per square-mile among different types of Illinois governments with more than one thousand in 2017 populations. Also, managerial governments, as table V indicates, are on average more home-rule,

more populated, and have much higher operational spending sizes than other forms of government in the state.

Focusing on form of council, table V shows that approximately 68 percent of all Illinois governments with 2017 populations more than one thousand have at-large form of council, while a little less than 32 percent have a ward form of council. Compared to ward-council municipalities, governments with at-large form of council are wealthier communities (as indicated by higher 2017 median household income) with lower poverty rates, higher rates of citizens with managerial positions, and higher levels of residential land areas.

In order to better determine and observe the effects of various institutional arrangements, in phase three of my sampling process using most similar and different cases, I cross-tabulated governments *within* each one of these five groups based on four variables: *2017 operational spending size*, *2000-17 population growth rate*, *2017 median household income*, and *percent residential EAV* (residential versus commercial/industrial land use). Then, for each group I removed cases that were in the middle of the distribution and chose governments that are low or high on these variables. I did so because the expectation is that the impacts of these variables can best be observed in the extremes of the distribution. For example, in each one of the five groups of governments listed in table V, cases with high or low levels of household incomes are included in my sampling frame at this stage while governments with moderate levels of household income are not well represented. Following, table VI lists the five variables of interest in this study and explains how these variables are transformed into ordinal categories in order to guide selection of cases for the sampling frame.

TABLE VI: ORDINAL VALUATION OF FIVE VARIABLES OF INTEREST

Variable	Minimum	Maximum	Average	Median	Categories	Ordinal Values
Form of Government	-	-	-	-	Manager / At-large	1
					Administrator / At-large	2
					Manager / Ward	3
					Administrator / Ward	4
					Strong Mayor / Ward	5
Population Change 2000-17 (a measure of Government Growth)	-40.19%	2290.56%	26.72%	3.96%	Less than -7%	1
					Between -7% and 7%	2
					Between 7% and 30%	3
					Greater than 30%	4
Median Household Income 2017 (a measure of Community Wealth)	\$20,873	\$216,875	\$72,567	\$66,072	Less than \$61,000	1
					Between \$61,000 and \$90,000	2
					Greater than \$90,000	3
Percent Residential Areas (a measure of Population Density)	18.18%	100.00%	76.26%	77.78%	Less than 70%	1
					Between 70% and 85%	2
					Greater than 85%	3
2017 Operational Spending (a measure of Government Size; in '000 USD)	\$84	\$440,093	\$30,923	\$16,775	Less than \$10 Million	1
					Between \$10 and \$25 Million	2
					Between \$25 and \$75 Million	3
					Greater than \$75 Million	4

* Minimum, maximum, average, and median figures are for the 300 governments left in the sampling frame at the second stage of the hierarchical sampling.

Table VI demonstrates how the five variables were transformed into ordinal format. For the form of government, a five-category ordinal values are assigned to each sample government based on form of CAO (manager, administrator, or strong mayor) and type of council (at-large or ward). Manager/at-large sample governments have the most reformed form of government (assigned an ordinal value of 1) followed by administrator/at-large (ordinal value of 2), manager/ward (ordinal value of 3), and administrator/ward forms (ordinal value of 4). Strong mayor/ward sample governments, on the other hand, have the most traditional form of government and are assigned an ordinal value of 5.

For the other four causal conditions listed in table VI (i.e. population change, median household income, level of residentialness, and operational spending size), the raw values are transformed into ordinal values based on the overall distributions among the 300 governments at the current stage of the hierarchical sampling (i.e. governments in groups 1-5 in table V). For example, for the 2000-17 Population Change, the range and distribution of values for all municipal governments in groups 1-5 was such that clustering raw values into four categories of below -7% (ordinal value of 1), between -7% and +7% (ordinal value of 2), between +7% and

+30% (ordinal value of 3), and more than +30% (ordinal value of 4), resulted in almost equally distributed number of cases in each category.

The same approach was used for transforming raw values into ordinal values for the remaining three variables in table VI. The 300 cases in groups 1-5 were distributed into three ordinal groups based on median household income (HHI) values. Governments with median HHI below \$61,000 received an ordinal value of 1, those with median HHI between \$61,000 and \$90,000 received ordinal value of 2, and the ones with median HHI more than \$90,000 were assigned an ordinal value of 3. Based on the level of residentialness, these governments were also divided into three groups. Municipalities with residential areas below 70% received an ordinal value of 1, those with residential areas between 70% and 85% received an ordinal value of 2, and the ones with residential areas in excess of 85% were assigned an ordinal value of 3.

Finally, these 300 governments were also clustered into four groups based on their operational spending size. Governments that had an operational spending size below \$10 million in 2017 received an ordinal value of 1. Municipalities with operating sizes between \$10 million and \$25 million received a value of 2. Municipalities with operating sizes between \$25 million and \$75 million were assigned a value of 3; and lastly, cases with operational spending sized in excess of \$75 million were given an ordinal value of 4.

I did the crosstabulations within each one of the five groups of government and, in total, dropped 201 governments with moderate levels of the four variables, leaving 99 governments remaining in the sampling frame. This final stage of the sampling frame consists of 99 cases distributed into 24 clusters that are high or low on the four variables. These 99 municipalities are shown in Table VII. From these 99 governments I chose 32 governments for my sample, which are shown in Table VIII.

TABLE VII: SAMPLING FRAME BASED ON HIERARCHICAL CLUSTERING OF ILLINOIS MUNICIPAL GOVERNMENTS

24 Clusters			# of Gov'ts in Each Cluster
Low Population Growth	Group 1	Small	10
		Small and Very Wealthy	3
		Relatively Large	13
		Relatively Large and Very Wealthy	3
	Group 2	Small	3
		Small and Very Wealthy	3
		Relatively Large	1
	Group 3	Small	1
		Relatively Large	5
	Group 4	Small	8
High Population Growth	Group 1	Small and Low/Moderate Wealth	6
		Relatively Large and Low/Moderate Wealth	5
	Group 2	Relatively Large and Moderate Growth	6
		Small and Moderate Growth	3
		Small/Moderate Wealth and Growth	6
		Small/Moderate Wealth/High Growth	1
		Small/High Wealth/Moderate Growth	3
	Group 3	Small/High Wealth and Growth	5
		Relatively Large/High Wealth and Growth	1
	Group 4	Relatively Large and High Growth	2
	Group 5	Small	6
		Relatively Large	3
		Large	1
	Group 6	Small and Moderate Growth	1
Total # of Governments**:			99

* Only Illinois municipal governments with 2010 populations more than 1000 that belong to groups 1 through 5 are included in hierarchical cluster analysis.

** Only governments with "extreme" measures of median household income (i.e. large and small) and % residential EAV (i.e. high and low) are included in the cluster analysis; while governments with "moderate" degrees of such factors are eliminated.

TABLE VIII: SELECTED GOVERNMENTS FOR CASE STUDY AND QCA

Government ID*	2017 Population	2000-17 % Pop Change	2017 Median Household Income	2017 Operational Spending ('000 USD)	% Residential EVA	Group
1	200,946	40.53	66,848	235,457	72.23	5
2	15,515	21.36	60,701	15,156	68.76	2
3	18,937	-0.78	78,481	24,993	94.81	1
4	41,551	-3.16	106,564	49,159	91.15	1
5	21,202	0.77	29,968	18,959	66.19	1
6	8,680	14.06	113,447	9,063	95.04	1
7	8,210	11.76	70,904	9,732	86.74	2
8	22,206	-2.86	84,359	18,080	89.65	4
9	43,141	10.57	41,009	49,158	59.29	3
10	15,257	-4.29	54,353	12,671	60.29	1
11	21,302	4.77	46,506	25,893	65.45	5
12	24,537	-7.21	37,396	30,382	63.88	3
13	47,066	12.47	103,773	106,606	89.03	1
14	51,631	4.32	87,608	82,197	87.30	1
15	18,931	-5.62	169,122	49,577	91.15	3
16	26,730	24.32	68,913	25,088	68.86	4
17	5,082	-4.97	43,871	7,814	54.14	2
18	5,745	11.81	74,583	4,797	85.68	4
19	54,531	20.15	56,363	74,375	68.12	1
20	33,591	0.47	119,568	69,900	85.19	1
21	5,459	1.30	105,929	12,270	89.16	1
22	12,376	4.19	51,948	18,423	59.50	5
23	12,545	11.41	80,259	18,436	88.05	5
24	11,215	-3.61	106,947	18,271	95.63	2
25	9,293	-1.39	47,088	49,595	36.24	1
26	8,898	-7.12	44,848	19,047	72.41	4
27	148,640	-0.98	38,573	225,342	62.80	4
28	57,107	17.99	76,061	66,138	88.36	1
29	10,208	19.76	71,346	8,270	82.67	4
30	42,141	15.79	34,273	38,396	59.73	4
31	87,999	0.11	48,551	94,611	54.42	5
32	13,187	5.56	150,880	16,642	98.04	1

* For a list of names and county of each sample government, please refer to *Appendix 2*.

The 32 governments listed in table VIII were chosen such that they could be grouped in two ways: 1) governments with similar size, population growth rate, wealth, and residentialness that vary by form of government (groups 1-5), and 2) governments in the same group (with the same institutional form of government) that vary by size (operational spending), population growth, and level of residentialness and wealth.

Chapter 2 explained the importance of form of government and institutional arrangement in municipal capital budgeting at length. Therefore, by choosing cases (from among 99 governments in the sampling frame in table VII) that have similar size, population growth rate, wealth, and residentialness and vary by form of government (groups 1-5 in table V), this research study – through “cross-group” analysis – can isolate and investigate the potential impacts that different forms of government may have on municipal capital budgeting.

Furthermore, as chapters 1 and 2 discussed in numerous occasions, municipal capital budgeting is a very complicated phenomenon that is influenced by many internal and external factors. Therefore, by selecting cases that have the same form of government but vary by size (operational spending), population growth, wealth, and level of residentialness, this research study will be able to conduct a “within-group” analysis and investigate whether and to what extent different government characteristics can affect approach to municipal capital budgeting and decision making among governments with the same institutional form of government.

B. Data Sources and Collection

This research study implements a wide range of venues for data collection. The main portion of data was collected through structured phone interviewing of 32 public officials in the sample governments using a survey questionnaire that is attached in *Appendix 1*. The questionnaire is divided into six sections. Section A looks at the overall approach of

governments to capital budgeting. Section B investigates the capital budgeting process, while section C enquires about factors that most affect capital budgeting process in these governments. Section D investigates different methods of municipal capital financing. Section E looks at how these governments react to natural disasters and crises and, finally, section F explores the level of development in governments and the overall quality of capital assets.

Appendix 1 presents the latest draft of the survey questionnaire that Prof. Rebecca Hendrick and I did a pilot test on from February to March 2018. The questionnaire was pilot tested on three finance directors of some of the largest governments in the Chicago region, one director of a Council of Governments (COG), and one senior research manager at the GFOA. Using the feedback received from the pilot tests, the questionnaire was then updated and used for data collection in the current study.

In addition to interviews, a wide range of other sources were used in this qualitative and case-study analysis. As table IX below shows, publicly available government documents such as operating and capital budgets, Comprehensive Annual Financial Reports, and Capital Improvement Plans (CIPs), as well as a wide range of archival records such as local newspapers, online articles, and council minutes and agendas were used in this study to collect comprehensive qualitative information on the 32 sample governments that provides insights into capital budgeting and planning behaviors of these governments.

TABLE IX: SOURCES OF DATA USED FOR CASE STUDY ANALYSIS

Data Category	Source of Data/Evidence
Documantations	- Operating and capital documents - Comprehensive Annuual Financial Reports - CIPs
Archival Records	- Local newspapers - Online articles and news sources - Council Minutes and Agendas
Interviews	- Structured phone interviews on government officials
Publicly Available Databases	- Census of Government - Illinois Department of Revenue (IDOR) - Illinois Office of the Comptroller (IOC) - U.S. Census

Additionally, and in order to undertake various types of trend analyses on the sample 32 governments (as thoroughly discussed in chapter 4), I collected a wide range of second-hand data from publicly available sources such as Census of Government, U.S. Census, Illinois Department of Revenue (IDOR), and Illinois Office of the Comptroller (IOC).

C. Participants and Procedure

I interviewed 32 public officials in this study. All 32 interviews were conducted from September through December of 2019. Each interview lasted for approximately thirty minutes and all interviews were recorded with a specific phone recording hardware. Then, each interview was carefully transcribed, and then the resulting data was cleaned up and coded (using Stata 14.2 software package) for descriptive, QCA, and case study analyses, which are discussed in chapters 4 and 5, respectively.

TABLE X: POSITIONS OF PUBLIC OFFICIALS INTERVIEWED FOR THE STUDY

Position of Interviewee	Form of Government Represented					Number of Interviewees
	Manager / At-large	Administrator / At-large	Manager / Ward	Administrator / Ward	Strong Mayor / Ward	
Finance Director	7	1	1	3	3	15
Public Works Director	0	1	0	0	1	2
Manager	6	0	2	0	0	8
Mayor	0	1	0	1	1	3
Administrator	0	1	0	3	0	4

Various types of public officials were interviewed in this research. As table X shows, fifteen finance directors, two public works directors, eight managers, three mayors, and four administrators were interviewed over the phone in this study. Table X also illustrates that all the interviewed managers hold position in managerial governments while all the interviewed administrators hold position in governments where the administrators hold CAO position.

It is also worth noting that the initial plan for interviews was to interview only finance directors or managers in this research study. Due to technical nature of the survey questionnaire, government managers or CFOs are the suitable audience for interviews. Therefore, I initially

contact the CFOs and managers of these 32 selected municipalities via email and asked them for a 30-minute phone interview. However, and after three attempts via email, neither managers nor CFOs in nine (of thirty-two) sample governments responded to my interview request. In the next step, I targeted other public officials in these nine sample governments and, fortunately enough, four administrators, three mayors, and two public works directors responded to my request and, therefore, were interviewed instead of managers/CFOs.

D. Analytical Strategy

Municipal capital budgeting is a very complicated process that spans over many years and impacts multiple generations. Capital decisions are not made in a vacuum; in fact, they are affected by many exogenous and endogenous factors. At the same time, decisions about capital projects and spending also affect many aspects of governments such as operational budgets and quality of equipment and infrastructures.

Due to overly complicated nature of capital budgeting, research in this area should not be reduced to a simple and linear hypothesis testing of a single factor, as is common in variable-oriented quantitative research. Rather, research in capital budgeting and spending should take a holistic approach where the compound effects of the most important causal factors (institutional form, size, growth rate, wealth, and residentialness of government, in this case) are examined through a complex and non-linear process.

Variable-oriented quantitative and case-oriented qualitative methods are two conceptually different approaches to studying social science phenomena. As a deductive technique, a variable-oriented quantitative method strives to formulate broad generalizations about a population of interest based on a sample of that population via testing hypotheses derived from relevant theories. This variable-oriented method utilizes statistical analyses and estimates the effect of a

causal variable on the dependent variable, while the effects of competing variables (i.e. control variables) are controlled for. The benefit of this approach to investigating social phenomena is its strong generalizability powers (i.e. findings of the sample are statistically generalizable to the population).

However, a glaring shortcoming of this methodology is that it assumes that causation is additive (Ragin, 2014). In other words, different statistical procedures estimate the separate contribution of each causal factor on the dependent variable, and different causal factors change the probability of a certain outcome *independently* of one another. Therefore, a variable-oriented quantitative methodology is incapable of investigating the compound and complex effects of multiple causes on a dependent variable.

The alternative methodological strategy to examine questions in social science is the case-oriented qualitative approach. This is an inductive approach, and its main goal is to interpret and understand specific cases due to their intrinsic values. Through comparison of cases, qualitative analysis is, then, able to provide generalized descriptive statements or theories limited to the cases under examination.

Although producing results that are not nearly as generalizable as the results of a quantitative analysis, a qualitative method enables the researcher to investigate complex and compound impacts of various causes on a dependent variable, because this latter type of methodology treats each case with all of its relevant characteristics (i.e. combination of causal conditions) as the unit of analysis and not a single variable, as is the case in the former type of methodology.

Qualitative research would allow me to observe that, for example, governments with comprehensive and professional budgeting practices can be either large or small and residential

or nonresidential but tend to occur most often in governments that have both high growth and an at-large form of government. In this case, both population growth and form of government are necessary for governments to have comprehensive and professional budgeting practices. These kinds of conditional, compound, and non-linear relationships are not as easy to observe in quantitative research.

Additionally, qualitative research provides me with comprehensive qualitative data that can shed much needed light on capital budgeting and planning behavior of the 32 sample governments. For instance, by collecting and analyzing data from sources such as council minutes, municipal capital and operating budgets, among other available data, I can understand *why* certain governments focus on replacement of their existing infrastructure while others may focus more on building new infrastructure.

This research study provides two types of qualitative analysis. First, a comprehensive descriptive and trend analysis of the data collected on the 32 sample governments is presented in Chapter 4, where major themes and patterns observed in the data are explored and governments with various socioeconomic and fiscal/financial characteristics are compared with each other. After a thorough descriptive analysis in chapter 4, Chapter 5 will provide causal analysis of the two main research questions (explored in chapter 1) using a suite of QCA and case-study analyses. The remainder of this chapter will discuss the QCA techniques, its various types of analyses, and the ways in which QCA methods will enable this study to investigate governments approach to capital budgeting.

1. Qualitative Comparative Analysis

In addition to case-study analysis, this research study will utilize Qualitative Comparative Analysis (QCA) to investigate the compound and complex causal relationships between

municipal governments characteristics and their approach to capital budgeting. QCA is a powerful inference technique that implements Boolean logic and algebra in order to make parsimonious results that can explain complex and compound associations between multiple causes and effects among the sample governments.

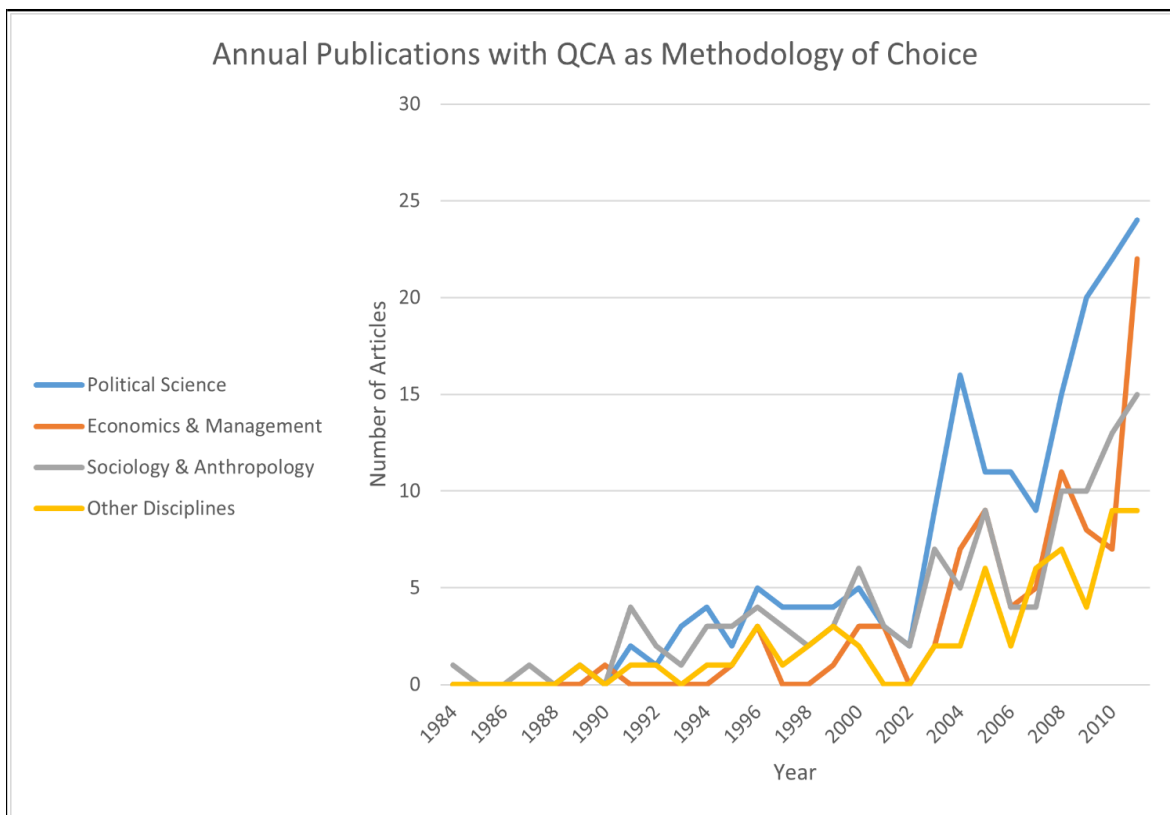
In qualitative comparative analysis, each case is represented as a configuration and combination of causal and outcome conditions. Then, these configurations are compared against each other and simplified through a bottom-up process of paired comparison using Boolean algebra (Patton, 2002). Finally, and through comparison of configurations (i.e. combinations of causal and outcome conditions), this analytical method uncovers *necessary* and/or *sufficient* conditions for a desired outcome to emerge.

As a prominent branch of comparative social inquiry (Przeworski and Teune, 1970), qualitative comparative analysis involves taking one case and comparing it against other similar cases in order to identify similarities and differences (Ragin, 2014). By identifying similarities and differences of cases, it will then become possible to develop a conceptual model that makes sense of the compound and combined relationships between different entities. In this case, by conducting a series of complicated Boolean analysis and by comparing 32 cases with various characteristics, a QCA analysis will let me observe the compound effects of the five factors I am investigating (i.e. government operating size, wealth, growth rate, residentialness, and institutional form) on the outcome of interest (approach to capital budgeting and spending).

QCA is fairly young, and although this method of inquiry in social science was born in the 1980s, its usage in various disciplines did not gain steam until mid-2000s. The three major disciplines that have utilized QCA more than any other areas of social science are Political Science, Economics and Management, and Sociology and Anthropology. Table XI illustrates the

annual total number of published articles in each discipline that have used QCA as the methodology of choice during the 1984 to 2011 period.

TABLE XI: ANNUAL PUBLICATIONS WITH QCA AS THE METHODOLOGY OF CHOICE



* Source: Rihoux, Álamos-Concha, Bol, Marx, & Rezsöházy (2013)

As table XI indicates, the use of this technique has grown, rather exponentially, in all disciplines after 2002 and especially after 2007. Over the whole period, political science (specifically comparative politics and comparative policy analysis) has the highest number of publications with QCA as the methodology of choice (51%), followed by sociology and anthropology (34%) and economic and management studies (26%).

QCA can be considered as a midpoint between variable-oriented quantitative and case-oriented qualitative analysis. On one hand, QCA includes some key strengths of the quantitative analysis. First, it allows for more than just a handful of sample cases to be analyzed which is

very rare in case-oriented studies. Generally speaking, the literature suggests that a range of 20- to 50-case is a suitable sample size for a QCA analysis. A traditional qualitative case-study, on the other hand, usually investigates an average of 5 to 10 cases. Second, fundamental operations of QCA rely on Boolean algebra and set logic. Therefore, it is an analytic approach and allows replication of results, similar to any other quantitative approach to analysis.

QCA embodies some essential facets of the case-oriented approach, as well (Berg-Schlosser, De Meur, Rihoux, and Ragin, 2009; Ragin, 1997). Similar to any other case-based analysis, QCA has a holistic approach, where each individual case is considered as a complex entity and a configuration of conditions and outcome. Therefore, QCA is essentially a case-sensitive approach (Rihoux and Marx, 2013).

Due to its unique features and qualities, QCA will help this research study to achieve two (seemingly conflicting) goals. First, QCA will help gather in-depth knowledge on these 32 cases and capture their complexity in capital budgeting and planning. Second, using QCA this research study will produce some level of parsimony across cases and, thus, allows for “modest” generalization of the results to other similar municipal governments in the state of Illinois.

The software package that I used to conduct QCA analysis is Tosmana version 1.61 developed by Professor Lasse Cronqvist, one of the pioneers and seminal authors in QCA analysis (Cronqvist, 2019). Although crisp-set QCA (csQCA) and fuzzy-set QCA (fsQCA) techniques are supported by a wide variety of software packages, Tosmana is amongst a small handful of computer software packages that support all three types of QCA analysis techniques (including mvQCA), making it a suitable choice for the current research study. The next two subsections explain the types of QCA analysis that I use in more detail and the Boolean analysis that is conducted by the software.

2. Different Types of QCA Analysis

There are three different types of QCA analysis. Crisp-Set QCA (csQCA) is the most basic form of QCA that only allows for binary data representation for both the causal conditions and the outcome. Multi-Value QCA (mvQCA) improves upon the csQCA method by allowing the causal conditions to take various ordinal values. The outcome variable in mvQCA, similar to csQCA, is limited to binary format. Finally, Fuzzy-Set QCA (fsQCA) allows both the causal conditions and outcome to take any *real* number between (including) 0 and 1, therefore, expanding the possibilities of QCA analysis even further.

Chapter 5 will investigate main research questions using two separate QCA techniques. First, a Multi-Value QCA (mvQCA) analysis will investigate the causal relationships between different characteristics of governments on one hand and their approach to capital budgeting on the other. As will be discussed in detail in chapter 5, to answer the first research question, I will investigate the causal relationships between government form, size, wealth, growth, and residentialness (as causal conditions of the QCA analysis) on one hand, and overall approach to capital budgeting (as the outcome of the QCA analysis), on the other. Given the multi-value nature of the conditions (i.e. five government characteristics mentioned here) as well as the binary nature of the outcome (i.e. comprehensive/professional versus unprofessional/political/ad-hoc approach to capital budgeting), a mvQCA analysis suits the first research question the best.

For the second research question, I will utilize a Fuzzy-Set QCA (fsQCA) analysis. The second QCA analysis will investigate the impacts that the approach to capital budgeting (i.e. the results of the earlier mvQCA analysis) may have on the capital/construction spending levels of government. For this round of analysis, a fsQCA technique will be used since fsQCA (unlike both csQCA and mvQCA) allows the outcome variable to take virtually infinite number of

values. As will be discussed in greater detail later in this subsection, fsQCA methodology calibrates the raw and uncalibrated data and, therefore, assigns corresponding calibrated values (between 0 and 1) to each uncalibrated datapoint. Given the continuous nature of capital spending data in this study, a fsQCA technique will be used for investigating the second research question.

In order to better visualize differences between various forms of QCA, tables XII, XIII, and XIV below compare hypothetical csQCA, mvQCA, and fsQCA truth tables, respectively, and highlight their differences. Every QCA analysis starts with a truth table. A truth table contains key information on all the cases in a given research study. Each column in a truth table represents a causal condition while the right-most column represents the outcome. Each row in a truth table represents a unique configuration of conditions. Each configuration (each row) represents one (or more) case(s) in the sample. After the truth table is produced, the QCA then utilizes a series of logical reductions using Boolean algebra in order to produce a parsimonious result that explains all the cases with the outcome of interest.

TABLE XII: CRISP-SET QCA TRUTH TABLE EXAMPLE

Configuration #	# of Cases	Causal Conditions				Outcome
		A	B	C	D	
1	2	1	1	0	0	1
2	1	1	1	0	1	0
3	1	0	1	1	0	0
4	3	1	0	0	1	0
5	3	0	0	1	1	1
6	1	1	1	0	0	1

* Columns A,B,C, and D are *causal* conditions in binary format

** *Outcome* is in binary format

*** Each row of the table is a unique *configuration* that represents one (or more) case(s)

The truth table in table XII contains hypothetical data and demonstrates information for the most basic form of QCA, i.e. crisp-set QCA. As the table shows, all causal conditions (A, B, C, and D) can only take binary values: 0 if a condition is absent and 1 if a condition is present. Similarly, the outcome in a csQCA truth table can only accept binary values: 0 if the outcome is absent and 1 if the outcome is present. Please also note that this hypothetical example shows that each row of the truth table is a unique configuration of causal conditions that could represent one (e.g. configuration number 2) or more (e.g. configuration number 5) cases.

TABLE XIII: MULTI-VALUE QCA TRUTH TABLE EXAMPLE

Configuration #	# of Cases	Causal Conditions				Outcome
		A	B	C	D	
1	1	5	4	5	2	1
2	1	2	3	1	1	0
3	2	1	2	2	5	1
4	1	3	1	4	3	0
5	3	4	2	1	1	1
6	2	1	5	3	3	1

* Columns A,B,C, and D are *causal* conditions and can take multiple values in Nominal,

** *Outcome* is in binary format

*** Each row of the table is a unique *configuration* that represents one (or more) case(s)

Table XIII presents a hypothetical truth table for a multi-value QCA. This hypothetical truth table also has four causal conditions A, B, C, and D. However, unlike the csQCA truth table in table XII, this mvQCA truth table allows the causal conditions to take multiple ordinal values. In this hypothetical example, cases can take any ordinal values of 1-5 for each causal condition. The outcome variable in mvQCA truth table, however, only allows for binary values (0 if a condition is absent and 1 if a condition is present) similar to csQCA truth table.

TABLE XIV: FUZZY-SET QCA TRUTH TABLE EXAMPLE

Configuration #	# of Cases	Causal Conditions				Outcome
		A	B	C	D	
1	1	0.67	0.92	0.22	0.5	0.64
2	1	0.12	0.44	0.39	0.84	0.85
3	1	0.7	0.32	0.66	0.53	0.35
4	1	0.6	0.65	0.45	0.73	0.56
5	1	0.4	0.55	0.51	0.28	0.76
6	1	0.33	0.87	0.58	0.3	1

* Columns A,B,C, and D are *causal* conditions and can take any *real* values between

** Column "Outcome" can take any values between 0 and 1.

*** Each row of the table is a unique *configuration* that represents one (or more) case

Finally, table XIV presents information for a fuzzy-set QCA truth table. fsQCA is the most advanced form of QCA that allows both causal conditions as well as the outcome variable to take any real number between (and including) 0 and 1. Due to this feature of fsQCA, this variant of QCA allows causal conditions and outcome variable to take virtually unlimited number of different values. It is worth noting that for the fsQCA method, the “uncalibrated” raw data for both the causal and outcome variables need to be calibrated first, and then presented in the truth table. Although the process of data calibration is conducted on a computer software level, the following simplistic example strives to elaborate the procedure by which fsQCA software calibrates the uncalibrated raw data.

FsQCA calibrates the raw data linearly. In other words, fsQCA uses the minimum and maximum datapoints of the raw data as anchor points in order to assign calibrated values between (including) 0 and 1 to all available raw datapoints. In the process of data calibration, the raw uncalibrated datapoints could take any *real* number between (including) 0 and 1. For instance, in a classroom where the shortest student is 5’5” (this is the minimum and is assigned a calibrated value of 0) and the tallest student is 6’5” (this is the maximum and is assigned a calibrated value of 1), then a student with the height of 6’0” is assigned a calibrated value of 0.5.

As tables XII, XIII, and XIV demonstrate, different QCA truth tables have different data characteristics and, therefore, are suitable to answer different research questions based on the characteristics of data involved. No matter the type of data involved, however, a truth table is only the first step in any type of QCA analysis. In order to better understand how QCA technique works, the next section will explore a basic form of Boolean and logical reduction in the form of a csQCA example.

3. Conducting a Boolean Analysis

This section will use a hypothetical example to illustrate how a Boolean analysis (the backbone of any QCA analysis) is performed. Both QCA analyses conducted in chapter 5 are performed using a computer software (discussed in the next section) but understanding how this process works could greatly help the reader appreciate the complexities and benefits of this methodology.

Every Boolean analysis starts with a truth table that contains configuration of causal conditions for empirical cases in each row of the table. In the next step of the analysis, it is determined whether each combination of conditions (i.e. each row of the truth table) results in the outcome of interest. For the purpose of explaining Boolean reduction procedure, a Crisp-Set QCA (csQCA) analysis will be conducted in this section using the following truth table that contains information for 12 hypothetical cases.

**TABLE XV: CRISP-SET QCA TRUTH TABLE
EXAMPLE (FOR ILLUSTRATION)**

Configuration #	# of Cases	Causal Conditions			Outcome
		A	B	C	
1	2	0	0	1	0
2	2	1	0	0	0
3	3	1	1	0	1
4	1	1	0	1	0
5	1	0	1	1	1
6	3	1	1	1	1

The truth table in table XV includes information on hypothetical cases with three dichotomous causal conditions (A, B, and C) and a dichotomous outcome. Each row of the truth table shows a possible combination of the dichotomous conditions A, B, and C (i.e. each row is a unique configuration that presents one or more cases), while the “Outcome” column shows the hypothetical outcome associated with each configuration.

As the truth table shows, there are two types of configurations. First, configurations that result in the outcome of “1” are given such value if the cases that have that specific configuration of causal conditions result in the outcome of interest. These are configurations number 3, 5, and 6 in the truth table above. Second type of configurations in a truth table are the ones with the outcome “0”. A configuration is given a “0” outcome value if cases with such configuration of causal conditions do not result in the outcome of interest. In table XV, configurations number 1, 2, and 4, are all configurations with “0” outcome.

There is also a third group of configurations called “logical remainders” that refer to configurations that are logically possible but represent no empirical case in the sample, and therefore are not included in the truth table. Although logical remainders are never included in a truth table, these configurations are included in the Boolean minimization procedure because by including them, the QCA analysis guarantees that all possible configurations of causal conditions are included in the process to produce the most parsimonious result and solution.

Using the csQCA example in table XV, the rest of this section will conduct a Boolean analysis to find the most parsimonious Boolean results and solutions for configurations with “1” as the outcome of interest. The exact similar analysis can be used to produce the most parsimonious Boolean results for configurations with “0” as the outcome of interest, if that is what a researcher is interested in. The process for the latter analysis would be identical to the

process for the former analysis, only this time configurations with “0” outcome would be selected as the outcome of interest.

In the next step of the Boolean analysis, a subset of the truth table will be produced and minimized that includes combinations that are associated with the outcome of interest. The outcome of interest could be cases with “1” or “0” outcome depending on specific research questions. For this example, cases with configurations that lead to a “1” outcome will be selected as outcome of interest in the first part of the analysis. These configurations with the same outcomes are called “primitive expressions” and are shown in table XVI. Alternatively, if we were interested in “0” outcomes for the analysis, then all the configurations with “0” outcome would have been labelled as primitive expressions (i.e. configurations number 1, 2, and 4).

TABLE XVI: PRIMITIVE EXPRESSIONS
TABLE

Configuration #	Causal Conditions			Outcome
	A	B	C	
3	1	1	0	1
5	0	1	1	1
6	1	1	1	1

Next, the primitive expressions listed in Table XVI will be minimized to produce “prime implicants”. A Prime Implicant is a simplified expression that logically indicates one (or more) primitive expression(s) but is causally simpler and more parsimonious than the original primitive expressions. In other words, if two primitive expressions have identical values for every causal condition but one, the two primitive expressions can be combined into one simpler and more parsimonious expression that includes all the causal conditions with shared values and eliminates the one discrepant factor. The resulting simpler and more parsimonious expression is called a *prime implicant*.

TABLE XVII: PRIME IMPLICANTS TABLE

Prime Implicant #	Causal Conditions			Outcome
	A	B	C	
1	1	1	-	1
2	-	1	1	1

* The dash '-' indicates that a discrepant causal condition is omitted

Table XVII lists two prime implicants produced from examination of primitive expressions in table XVI. Inspection of configurations number 3 and 6 in table XVI shows that the two configurations have both causal conditions A and B present and that the causal condition C is only present in configuration number 6 while absent in configuration number 3. Therefore, causal condition C can be eliminated and configurations number 3 and 6 can be combined to produce a single and simpler expression. This simpler expression is prime implicant number 1 in table XVII and states that if causal conditions A and B are present, then the outcome of interest (i.e. “1” outcome, in this case) happens regardless of whether or not causal condition C is present or absent.

Additionally, inspecting configurations number 5 and 6 in table XVI also shows that these two configurations can also be combined to produce a single and simpler expression as both have causal conditions B and C present while causal condition A is the discrepant factor (i.e. absent in configuration number 5 and present in configuration number 6) and can be dropped. The resulting simpler expression is prime implicant number 2 in table XVII and states that if causal conditions B and C are present, then the outcome of interest (i.e. “1” outcome) happens regardless of whether or not causal condition A is present or absent.

Since no further logical reductions can be made to the rows of the table XVI, the Boolean minimization procedure is finished, and the results of the minimization procedure is the two prime implicants listed in table XVII. The generation of prime implicants is only the first of a

two-step procedure used by QCA in minimizing the truth table. The second step involves producing a more parsimonious set of prime implicants that is sufficient to produce all primitive expressions in the table XVI. This final set of prime implicants will become the parsimonious result and solution of the QCA analysis.

Drass (1992) explains that the QCA program simplifies the prime implicant chart by applying two rules. First, if a primitive expression is explained by only one prime implicant, then that prime implicant must be part of the solution. The second rule holds that after all the primitive expressions are accounted for by the first rule, then all the redundant prime implicants should be eliminated. Redundant prime implicants are the ones that explain a subset of configurations that are covered by another prime implicant. After all redundant prime implicants are eliminated, what remains is the most parsimonious Boolean solution.

In this example, prime implicant number 1 explains configurations number 3 and 6 while prime implicant number 2 explains configurations number 5 and 6. Therefore, since there are no redundant prime implicants (as both prime implicants are required to explain all three configurations number 3, 5, and 6), both prime implicants listed in table XVII will be part of parsimonious Boolean solution listed below:

$$(A*B) + (B*C) \rightarrow \text{Outcome (1)}$$

In Boolean algebra, an uppercase letter indicates *presence*, while a lowercase letter indicates *absence* of a causal condition. Also, In Boolean nomenclature, a plus sign (+) refers to logical operator *OR*, while multiplication (*) refers to the logical operator *AND*. As the Boolean solution above indicates, there are two sets of causal conditions that result in the presence of the outcome of interest (outcome “1”, in this case): the presence of A *AND* presence of B, *OR* the presence of B *AND* presence of C.

This parsimonious Boolean solution shows that B is a *necessary* causal condition. In Boolean algebra, a causal condition is necessary when it is present in all of the prime implicants in the parsimonious solution. In this case, causal condition B is present in both prime implicants $A*B$ and $B*C$. Causal conditions A and C, on the other hand, are present in one prime implicant while absent in the other; hence, not necessary for the occurrence of the outcome of interest.

Looking at the parsimonious solution, no causal condition is *sufficient* for the outcome of interest to occur. In Boolean algebra, a *sufficient* condition is a causal condition that alone and by itself warrants the occurrence of the outcome of interest. In this case, there is no sufficient condition that warrants the occurrence of the outcome of interest because none of the causal conditions A, B, or C can singlehandedly, and independently of all other causal conditions, explain all the primitive expressions in table XVI.

The Boolean analysis that was explained here was the simplest form of analysis used by QCA method called csQCA. Unlike csQCA that only allows for binary causal conditions, mvQCA lets conditions in the truth table take multiple ordinal values, while the range of values causal conditions can take in fsQCA is virtually unlimited as the conditions can take any real value within the 0-1 range. More values for causal conditions of the truth table directly translates into significantly higher number of configurations.

Therefore, illustrating how a mvQCA or a fsQCA minimization procedure works would be extremely complicated as the process involves Boolean minimization of enormous number of configurations (including hundreds, or even thousands of logical remainders); something that only a sophisticated piece of computer software can achieve effectively and efficiently. However, both mvQCA and fsQCA methodologies employed in this study follow the same basic Boolean logic as the csQCA method explained in this section follows.

IV. DESCRIPTIVE ANALYSIS OF SURVEY RESPONSES

This chapter presents the findings of a descriptive analysis on data collected from interviewing 32 municipal public officials in Illinois between September and December of 2019. The first section of the chapter compares demographic and fiscal characteristics of the research sample with 330 similarly populated Illinois governments. Compared to similarly populated Illinois municipalities, the sample governments are larger in spending and revenue sizes, wealthier, and have more fiscal resources and capacity.

Section B dives deeper into the survey questionnaire and finds that, overall, the sample governments follow a comprehensive approach to capital budgeting and have a relatively professional budgeting process. Additionally, larger and/or wealthier governments have a higher tendency to follow a comprehensive/formal approach to capital budgeting. Third and last section further elaborates on major themes and “stories” that emerge from the survey data.

A. Sample Governments in the Context of Other Illinois Municipalities

Before discussing the findings of the survey data, in this first section of the chapter I will compare socioeconomic and fiscal/financial characteristics of the sample and Illinois municipalities with comparable populations (i.e. 2017 populations between 5,000 to 201,000). Doing so will help put the sample (as well as findings of the survey that relate to these 32 governments) into perspective relative to all Illinois municipalities with similar populations.

Table XVIII shows that compared with both the study population (i.e. 656 Illinois municipal governments with 2017 populations more than 1000) and average Illinois municipality

with 2017 population between 5,000 to 201,000, the average sample government is significantly more populated, is wealthier with higher white-collar jobs and lower poverty rate and has significantly higher revenue capacity (as measured by EAV per square-miles). Of course, larger, and wealthier populations translate into higher fiscal and administrative capacity for municipal budgeting. Therefore, and when generalizing to all Illinois municipalities, the survey findings discussed in subchapters 4.2 and 4.3 (as well as the findings of the Qualitative Comparative Analysis and case studies discussed in the next chapter) should take these differences into account.

TABLE XVIII: DEMOGRAPHIC CHARACTERISTICS FOR MUNICIPAL GOVERNMENTS IN SURVEY SAMPLE AND ILLINOIS: 2017

Municipal Governments	Population (2017)		% Population Change (2000-17)		Median HHI (2017)	Level of Urbanization		Avg % Pop w/ Managerial Positions	Avg Poverty Rate	Avg Land Area (Sq. Mile)	Avg % Residential EAV	Avg % Commercial EAV	Avg % Industrial EAV	Avg EAV per Sq Mile (in 2017 / 000 USD)
	Avg	Median	Avg	Median		Sub/Urban	Rural							
Survey Sample (N = 32)	34,496	20,070	6.61	4.25	75,241	32	0	41.04	8.26	12.49	75.94	17.36	6.07	180,000
Population > 5,000 (N= 330)	22,518	14,486	34.17	3.44	69,216	330	0	36.42	9.21	9.05	75.31	17.85	5.99	130,000
Population > 1000 (N = 656)	12,001	4,766	24.86	2.58	63,225	513	173	32.63	9.74	5.46	76.2	17.16	4.87	78,100

* Chicago, IL is omitted from all analyses and discussions due to its massive size in population, spending, and other categories.

** Sources of data:

- [Census.gov](#) for Population (2017), Population Change (2000-17), Median HHI (2017), Avg % Pop w/ Managerial Positions, and Avg Poverty Rate.
- [Illinois Office of Comptroller \(IOC\)](#) for Level of Urbanization, Avg Land Area, Avg Residential/Commercial/Industrial EAV, and Avg EAV per Sq. Mile.

TABLE XIX: GOVERNANCE STRUCTURE FOR MUNICIPAL GOVERNMENTS IN SURVEY SAMPLE AND ILLINOIS: 2017

Municipal Governments	Form of Council		Form of CAO			Whether dedicated CFO		Form of CFO		Home Rule		Traditional Form of Government		
	% At large	% Ward	% Mayor	% Administrator	% Manager	% Yes	% No	% Elected	% Appointed	% Yes	% No	% C-M	% Weak M-C	% Strong M-C
Survey Sample (N = 32)	53	47	13	34	53	100	0	16	84	50	50	53	34	13
Population > 5,000 (N= 330)	67	33	36	31	33	95	5	15	85	48	52	33	56	11
Population > 1000 (N = 656)	68	32	61	22	17	91	9	18	82	29	71	18	77	5

* Chicago, IL is omitted from all analyses and discussions due to its massive size in population, spending, and otherwise.

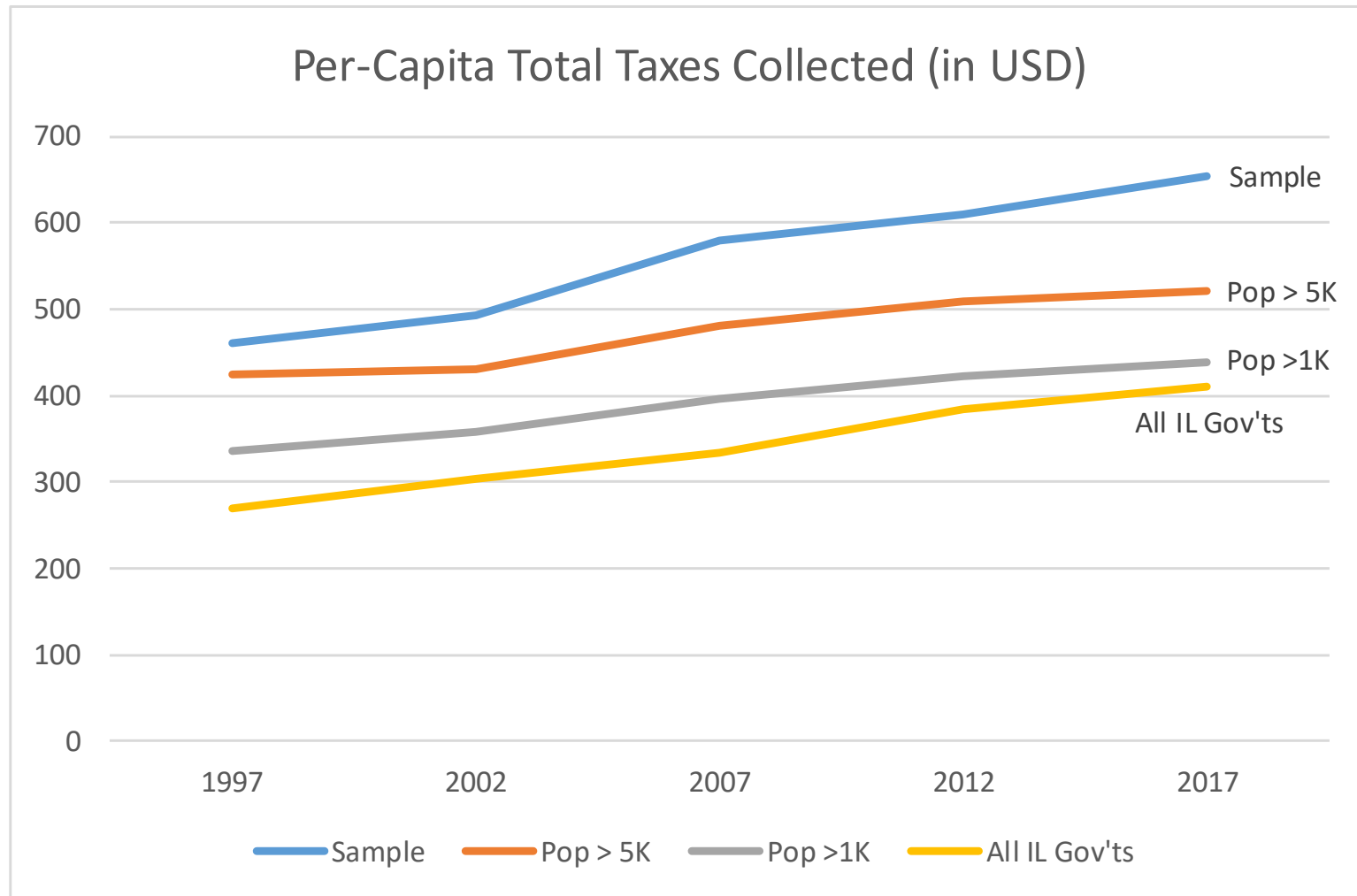
** Council-Manager (C-M); Mayor-Council (M-C)

*** Sources of data: municipal codes, official municipal government websites, and Illinois county clerk offices' local election records.

Table XIX illustrates the form of governance among Illinois municipalities. Compared to all Illinois municipalities, council-manager form of government is overrepresented, while weak mayor-council form is underrepresented in the sample. In both the sample and similarly populated governments, the majority form of council is *at-large* (although to a lesser extent in the sample). Regarding form of CAO, governments in which the mayor is the CAO (strong mayor or president-trustee without a manager or administrator) are highly underrepresented in the sample relative to all Illinois municipalities, while governments in which the manager is the CAO are overrepresented. Finally, similar to other municipalities in the state, more than 80 percent of sample governments have appointed CFOs. Since the main premise of this research study is that the form of government (including form of CAO and the council) has a direct and substantial impact on capital budgeting behavior of governments, one should take these differences into account when generalizing the findings of this study to other Illinois municipalities.

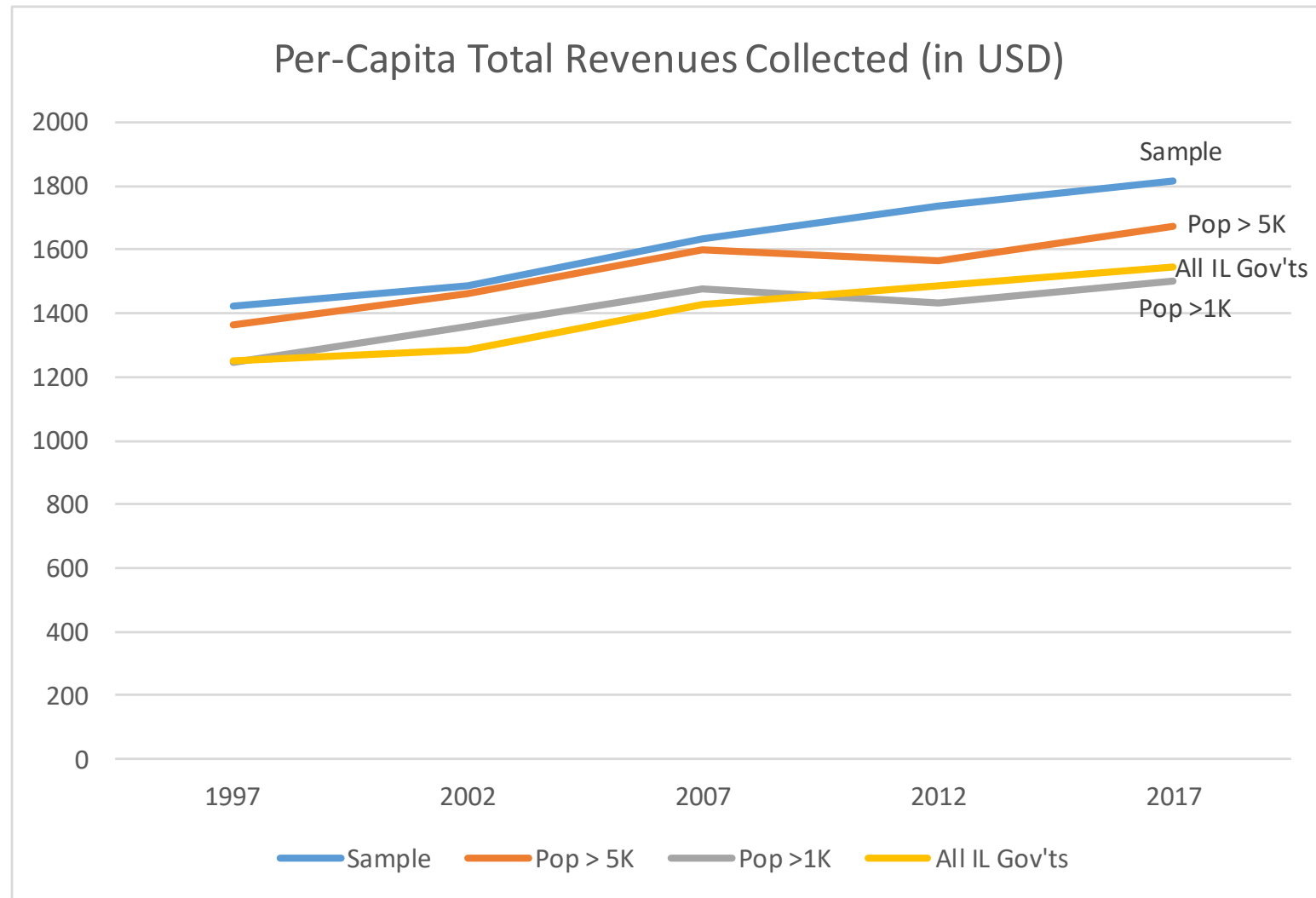
Tables XX and XXI illustrate historic trends for total taxes and total revenues, respectively, collected by different groups of government during the 1997-2017 period. As both tables indicate, sample governments have historically collected more per capita taxes and raised more per capita revenues compared with similarly sized governments in Illinois.

**TABLE XX: PER-CAPITA TOTAL TAXES COLLECTED BY GOVERNMENTS
IN SAMPLE AND ILLINOIS: 1997-2017**



* Source: Census of Government 1997-2017

**TABLE XXI: PER-CAPITA TOTAL REVENUE COLLECTED BY GOVERNMENTS
IN SAMPLE AND ILLINOIS: 1997-2017**



* Source: Census of Government 1997-2017

Table XXII takes a closer look at various 2017 revenue categories among the sample and other Illinois municipalities. In 2017 the average sample government collected a much higher per-capita property tax, resulting in a higher own-source revenue per-capita compared to other three groups of governments. The average sample government also collected higher per-capita service charges and overall enjoyed a higher level of per-capita total revenue compared to other Illinois municipalities.

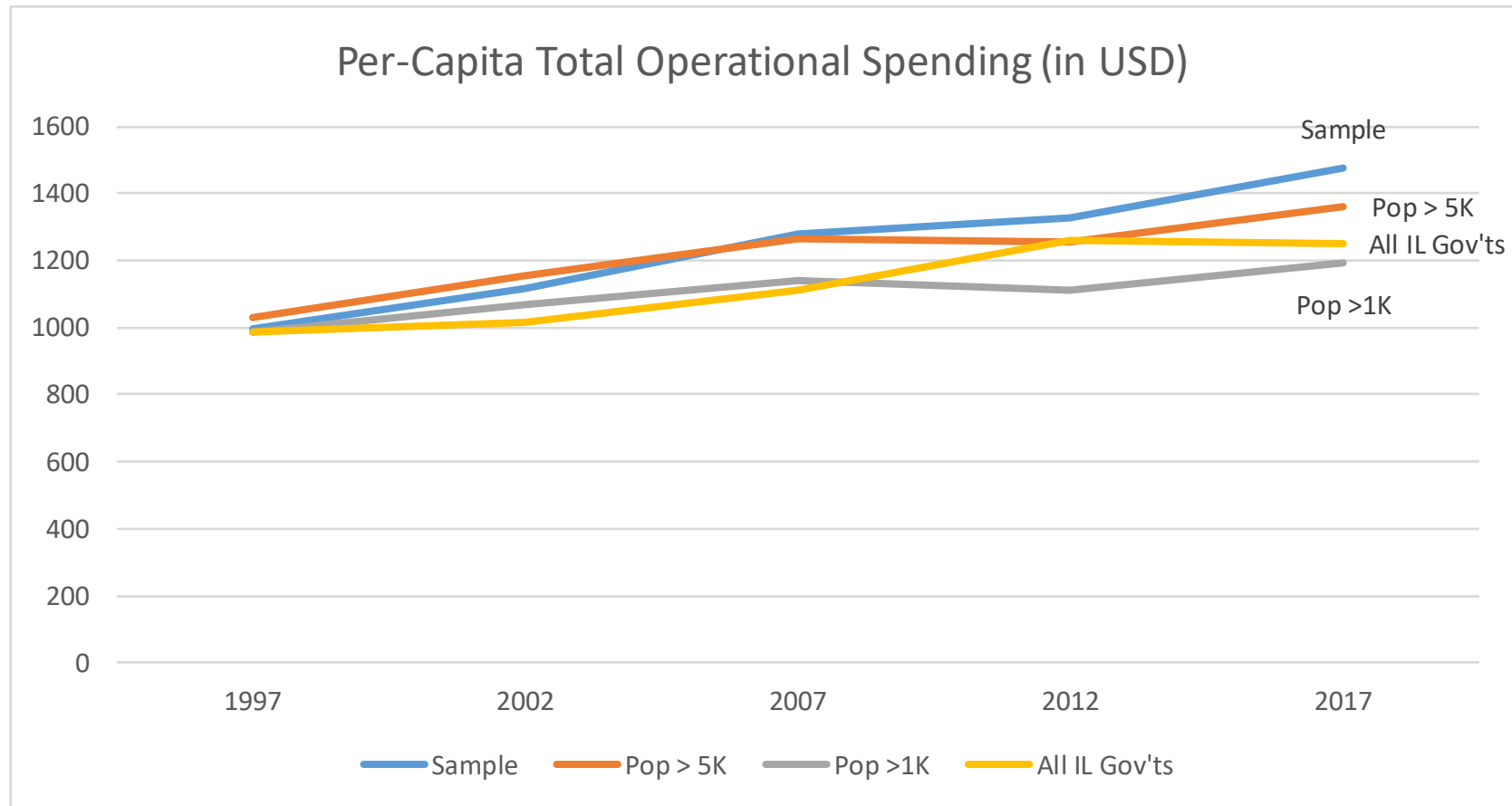
TABLE XXII: 2017 PER-CAPITA REVENUES FOR MUNICIPAL GOVERNMENTS IN SURVEY SAMPLE AND ILLINOIS

Variable Name	Survey Sample (N = 32)	Population > 5,000 (N= 330)	Population > 1000 (N = 656)	All IL Gov'ts
Average Population	34,496	22,518	12,001	8,625
Property Tax	459.17	347.95	307.23	312.30
General Sales Tax	50.67	56.46	33.53	23.28
Charge - Sewer	87.39	86.18	95.38	148.55
Charge - Solid Waste	30.66	32.03	36.23	29.47
Charge - Water	214.94	227.62	218.96	291.63
L-T Debt Outstanding (nonGO)	70.50	63.93	52.47	27.21
L-T Debt Outstanding (GO)	1,836.63	1,847.91	1,550.48	1,259.73
Total Taxes	654.43	521.07	438.73	409.74
Total Charges	617.90	591.20	562.25	598.20
Total IGR from Federal Gov't	15.84	16.80	16.35	24.93
Total IGR from State Gov't	373.38	390.72	355.31	330.51
Total Revenue	1,817.37	1,673.78	1,503.41	1,546.67

* Source: Census of Government 2017

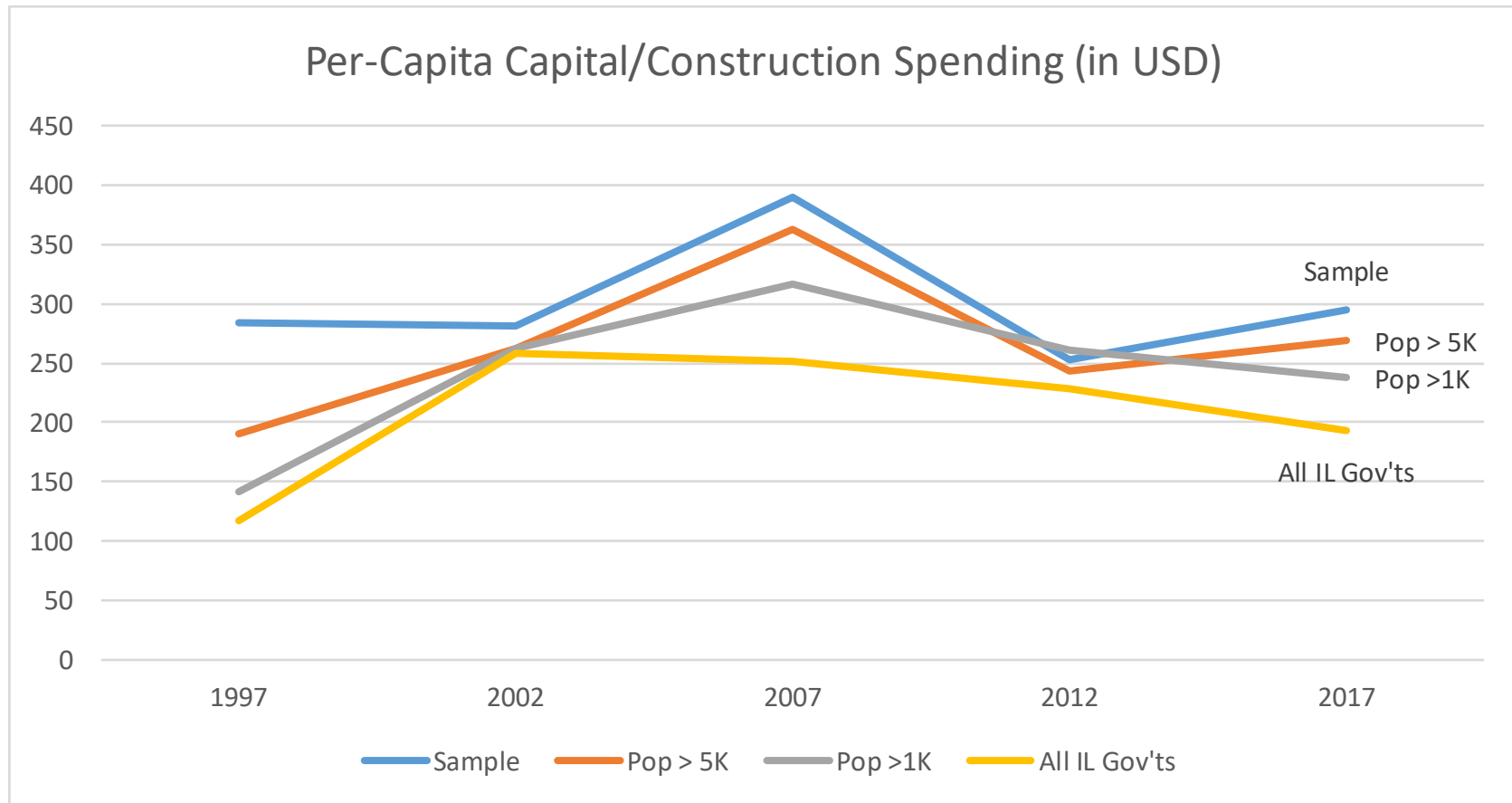
Historically, and compared to other Illinois municipalities, the sample governments have spent more per-capita on both operational and capital spending. Tables XXIII, XXIV, and XXV show the trends for operational, capital/construction, and total spending, respectively, for the governments in the sample and Illinois during the 1997-2017 period.

TABLE XXIII: PER-CAPITA TOTAL OPERATIONAL SPENDING BY GOVERNMENTS IN SAMPLE AND ILLINOIS: 1997-2017



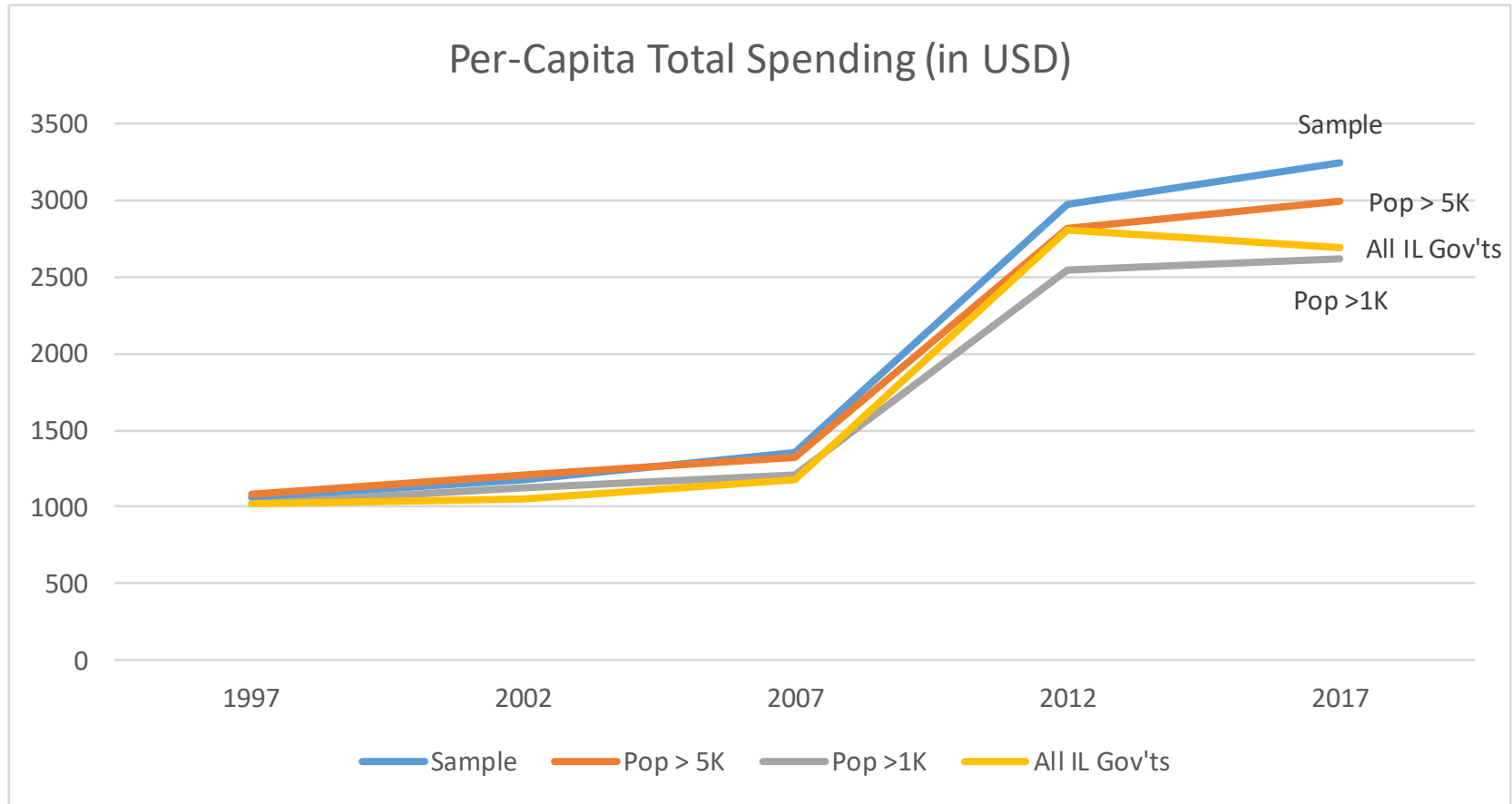
* Source: Census of Government 1997-2017

TABLE XXIV: PER-CAPITA TOTAL CAPITAL SPENDING BY GOVERNMENTS IN SAMPLE AND ILLINOIS: 1997-2017



* Source: Census of Government 1997-2017

TABLE XXV: PER-CAPITA TOTAL SPENDING BY GOVERNMENTS IN SAMPLE AND ILLINOIS: 1997-2017



* Source: Census of Government 1997-2017

Interestingly, as table XXIV illustrates, all four groups of governments decreased their per-capita capital spending following the Great Recession of 2008, while operational spending (as table XXIII shows) experienced a steady growth over the same period. As discussed in chapter 2, it appears that governments tend to sacrifice capital and construction spending in favor of balancing operating budgets during hard fiscal periods such as the Great Recession.

Table XXVI breaks down 2017 operational and capital spending areas for different groups of government in Illinois. The table shows that in 2017 sample governments spent considerably more than other Illinois municipalities on both operational and capital spending areas. The average sampled government spent about \$111.35 and \$25.80 per-capita more than similarly populated governments on operational and capital/construction areas of spending, respectively.

Obviously, higher capital and operating spending speaks to the higher fiscal capacity of governments in the sample compared to other Illinois municipal governments. Therefore, findings presented in sections B and C may not be a fair representation of all municipal governments throughout the state which reduces the external validity of the findings. On the other hand, the fact that the sample governments are relatively more active (than other groups of governments listed in table XXVI) in capital spending and budgeting, will help improve the internal validity of the findings of the current research study because the higher fiscal and administrative capacity of sample governments (relative to other Illinois municipalities) makes the causal effects and relationships examined in this study immune to potential effects that varying fiscal and administrative capacities could have on capital budgeting and planning of governments.

TABLE XXVI: 2017 SPENDING FOR MUNICIPAL GOVERNMENTS IN SURVEY SAMPLE AND ILLINOIS

Variable Name	Surveyed Sample (N = 32)	Population > 5,000 (N= 330)	Population > 1000 (N = 656)	All IL Gov'ts
Average Population	34,496	22,518	12,001	8,625
Operational Spending:				
Public Buildings	34.96	17.85	14.90	15.88
Parking	2.53	2.38	1.76	0.96
Park & Rec	53.63	41.69	46.35	38.34
Sewer	45.39	44.16	52.18	101.42
Solid Waste	19.64	26.54	25.18	21.39
Water	179.38	178.04	174.28	310.87
Total Operational Spending	1,473.59	1,362.24	1,190.82	1,251.27
Capital/Construction Spending:				
Public Buildings	0.00	0.38	0.19	0.12
Parking	0.69	2.66	1.63	0.87
Park & Rec	17.13	6.57	9.34	6.88
Sewer	9.84	16.42	19.66	23.87
Solid Waste	29.69	23.97	23.83	15.22
Water	56.13	50.90	45.41	51.75
Total Cap/Con Spending	294.60	268.80	237.60	192.90
Total Spending 2017 (Operational+Capital)	3,241.79	2,993.29	2,619.24	2,695.44

* Source: Census of Government 2017

** All figures are in 2017 Per-Capita

B. Survey of 32 Public Officials: Initial Findings

This second section of the chapter presents the preliminary findings of the interviews conducted on 32 Illinois municipal public officials using the survey discussed in the previous chapter. The survey is presented in the Appendix 1. The questionnaire is comprised of six parts. Part A looks at the overall approach of governments to capital budgeting. Part B investigates the capital budgeting *process*, while part C enquires about *factors* that most affect capital budgeting process in these governments. Part D investigates different methods of municipal capital financing. Part E looks at how these governments react to natural disasters and crises and, finally, part F explores the level of development in governments and the overall quality of capital assets. Following, each one of these six sections are discussed in more details.

1. Part A: Priming the Pump

Survey data for this part indicate that the majority of governments consider capital budgeting as *extremely* important (relative to operating budgets as table XXVII indicates), and that most of capital spending in these governments is focused on *maintenance* and *replacement*

of existing infrastructure, followed by *building new* infrastructure (table XXVIII). When asked about the importance of capital spending relative to operational spending (question A1 in the attached questionnaire), more than half of governments reported that capital spending is *extremely* important while 31.2 and 12.5 percent reported that capital spending is *moderately* and *slightly* important, respectively (table XXVII).

Question A2 of the questionnaire (Appendix 1) asks what percentage of the total capital spending goes into major maintenance, replacement, and new infrastructure. As table XXVIII illustrates, 8 governments reported that more than 50 percent of their total capital budget is spent on major maintenance, while 11 governments reported that they spend 26-50 percent of their total capital spending on major maintenance. Spending on new infrastructure, on the other hand, tends to get the least attention in governments as 29 governments reported that less than 25% of their total capital spending goes to building new infrastructure.

TABLE XXVII: IMPORTANCE OF CAPITAL VS OPERATIONAL SPENDING

Response	Frequency	Percent	Cumulative Percent
Slightly Important	4	12.5	12.5
Moderately Important	10	31.2	40.6
Extremely Important	18	56.3	100.0
Total	32	100.0	

TABLE XXVIII: PORTION OF TOTAL CAPITAL BUDGET SPENT ON MAJOR MAINTENANCE, REPLACEMENT, AND BUILDING NEW INFRASTRUCTURE

Portion of total capital budget	Major Maintenance	Replacement	New Infrastructure
0-25%	13 40.63%	15 46.88%	29 90.63%
26-50%	11 34.38%	13 40.63%	3 9.38%
51-100%	8 25.00%	4 12.50%	0 0.00%
Total	32 100%	32 100%	32 100%

2. Part B: The Process

Responses to questions in part B of the questionnaire indicate that the sample governments (for the most part) have a comprehensive and formal capital budgeting process manifested in adoption of a separate capital planning processes that is driven by a holistic view of capital spending needs in all areas of government, a dedicated planning team (where

professional appointees such as CAO, CFO, engineers, and department heads are more involved in planning than elected officials), a periodic inspection plan (PIP), and a capital improvement plan (CIP) that includes both major and minor maintenance line items. When asked whether they have a separate capital and operating planning processes, 87.5 percent of governments reported they have separate processes for capital and operational spending.

Governments were also asked about the extent to which spending for capital projects is driven by a holistic/comprehensive view of capital spending needs in all areas of government. 87.5 percent responded that their capital infrastructure spending is driven – either to some or great extent – by a holistic view of capital needs in all areas of government. Additionally, capital spending and budgeting in the sample governments is mostly a bottom-up process in that each department sends its annual request to the CAO where the total capital budget is put together. When asked to what extent capital budgeting is guided by yearly requests from departments responsible for building/maintaining infrastructure, 65.6 percent of sample governments responded to a *great extent* while 28.1 percent reported to *some extent*.

Responses to question B5 of the questionnaire shows that 40.6 percent of surveyed governments have a formal Dedicated Capital Planning Team (DCPT) while 28.1 percent noted that they put together a planning team on a project-by-project (ad-hoc) basis. Table XXIX shows that sample governments tend to put together “professional” capital planning teams mostly comprised of professional appointees.

TABLE XXIX: INVOLVEMENT OF PUBLIC OFFICIALS IN DEDICATED CAPITAL PLANNING TEAMS (DCPT)

Member on planning team or chair?	Member									
	Mayor	Board Members	CAO	CFO	Econ Dev Coordinator	Urban Planner	Engineer	Dept. Heads	End Users	External Advisors
No	13 59.09%	13 59.09%	1 4.55%	3 13.64%	6 27.27%	6 27.27%	2 9.09%	0 0.00%	18 81.82%	9 40.91%
Yes	6 27.27%	7 31.82%	7 31.82%	15 68.18%	8 36.36%	5 22.73%	15 68.18%	21 95.45%	2 9.09%	11 50.00%
Yes and Chair	3 13.64%	2 9.09%	11 50.00%	3 13.64%	0 0.00%	1 4.55%	1 4.55%	1 4.55%	0 0.00%	0 0.00%

* 10 governments reported they do NOT have a DCPT, 13 governments have DCPT, while 9 governments mentioned the 'sort of' have a planning team.

** All percentages are relative to the total of 22 governments that reported they have (or 'sort of' have) a DCPT

Survey data also shows that the interviewed governments mostly follow a comprehensive and formal approach for documenting and reporting capital spending and financing. Slightly more than 53 percent of interviewees reported that their government produces a PIP, among which 76.47 percent update their plans every three years or less. 90.6 percent of all interviewed governments have a CIP and approximately 82 percent of them produce a multiyear document with at least 5 years of capital planning. Also, among the 29 governments that have a CIP, 93.1 percent update their documents annually while the remaining 6.9 percent update their CIPs every three years.

Among the 29 governments that have a CIP, 55.2 percent reported that they include both major and minor maintenance in the capital plan while 37.9 percent reported they include only major maintenance. Interestingly, governments that include both major and minor infrastructure maintenance items in their CIPs also reported higher share of their total capital budget spent on maintenance of existing infrastructure (table XXX).

TABLE XXX: CORRELATIONS BETWEEN LEVEL OF MAINTENANCE SPENDING AND INCLUSION OF MAJOR/MINOR SPENDING ITEMS IN CAPITAL PLANS

		Does capital plan include Major/minor maintenance spending?			Total
		no major or minor	major not minor	both major & minor	
% capital spending to major maintenance	0-24	1 50.0%	0 0.0%	1 6.3%	2 6.8%
	25-49	1 50.0%	8 72.7%	3 18.8%	12 41.3%
	50-75	0 0.0%	3 27.3%	12 75.0%	15 51.7%
Total		2 100.0%	11 100.0%	16 100.0%	29 100.0%

chi sq $\chi = 9.0, p=.17$
gamma $\gamma = -0.37$

3. Part C: Factors in Capital Decisions

Part C of the questionnaire investigates the factors that affect municipal capital decisions. Looking at the data as a whole, it seems that surveyed governments envision a capital decisions-making process based on (and guided by) sound and professional factors, but the impact that elected officials have on capital decisions is unmistakably present.

When asked whether government assesses its financial or debt capacity in determining financing infrastructure projects, 65.63 percent of governments reported they assess debt capacity for *all* projects while 31.25 percent reported they assess debt capacity only for *some* projects. Also, when asked if government assesses the cost and benefits of financing options for financing capital projects, a little more than a third (34.39 percent) of governments reported they assess costs and benefits of capital financing options for *all* projects, while the majority (59.38 percent) reported they do this only for *some* projects.

Regarding the types of information that affects decisions about capital *spending*, 71.88 percent and 28.12 percent of interviewed governments maintain a ‘*complete*’ and ‘*partial*’ inventory of all their long-term assets, respectively (based on responses to question C3). Also,

62.50 percent reported that they *often* assess the condition of existing infrastructure before deciding on current and future capital spending, while another 37.5 percent reported they *sometimes* do these assessments (based on responses to question C4). Additionally, responses to question C5 shows that 18.75 percent of governments *often* perform demand analysis for new infrastructure, while 56.25 percent *sometimes* do such demand analysis.

Responding to question C13, the majority of the interviewed governments noted that they let the industry standards guide their capital decisions. 21.88 percent of governments consider industry standards (e.g. GFOA best practices) to impact municipal capital spending/financing decisions to a *great* extent, while 50 percent consider such standards impact their capital decisions to *some* extent.

Data collected on part C also shows that these governments, for the most part, have established policies guiding their capital spending and financing decisions. Question C14 enquires about established policies in four specific areas: 1) how and when capital planning will be conducted, 2) how capital spending will be financed, 3) how capital assets are valued and depreciated, and 4) how capital assets will be managed. From among the four specific policies that they were asked about, 75 percent of governments reported they have policies on how capital assets valued and depreciated and 50 percent mentioned they have policies on how/when capital plans will be conducted. Policies on how capital assets will be managed (with 46.88 percent) and how capital spending will be financed (with 40.63 percent) are less common among these governments.

Although interviewed governments seem to follow a professional decision-making process, the impacts of elected officials cannot be neglected. Table XXXI illustrate the importance of different factors in capital spending in general. As the table illustrates,

recommendations from public works staff, followed by desire of elected officials, are the most influential factors affecting capital decisions.

TABLE XXXI: EXTENT TO WHICH THE FOLLOWING ITEMS GUIDE CAPITAL SPENDING DECISIONS

Response	Strategic Plan	Land Use	Municipal Ordinance	County Ordinance	State Statute	Elected Officials' Desire	PW Staff Recommendation	External Consultants Recommendations
Very Little	6 18.75%	10 31.25%	14 43.75%	21 65.63%	5 15.63%	0 0.00%	0 0.00%	6 18.75%
Some Extent	13 40.63%	16 50.00%	14 43.75%	4 12.50%	18 56.25%	15 46.88%	5 15.63%	18 56.25%
Great Extent	10 31.25%	5 15.63%	4 12.50%	0 0.00%	8 25.00%	17 53.13%	27 84.38%	8 25.00%
Total	29 90.63%	31 96.88%	32 100.00%	25 78.13%	31 96.88%	32 100.00%	32 100.00%	32 100.00%

Strong impacts of the elected officials on capital spending and financing decisions are also apparent in table XXXII. As table XXXII illustrates, mayors are considered more important than CFOs and nearly as important as CAOs in capital budgeting process. On the contrary, general public, end users (both businesses and residents), and economic development coordinators are considered as the least important in capital budgeting process. Underrepresentation of general public/end-users in capital process is further elaborated in subsection 2, section C of this chapter.

TABLE XXXII: IMPORTANCE OF PUBLIC OFFICIALS IN CAPITAL SPENDING/FINANCING DECISION MAKING PROCESS

Importance of member in cap spend/fin decisions	Member								
	Mayor	Council Members	CAO	Econ Dev Coordinator	CFO	PW Director	General Public	End User: Residents	End User: Business
not important	1 3.13%	1 3.13%	0 0.00%	6 18.75%	1 3.13%	0 0.00%	2 6.25%	1 3.13%	1 3.13%
slightly important	1 3.13%	2 6.25%	0 0.00%	9 28.13%	3 9.38%	1 3.13%	12 37.50%	10 31.25%	11 34.38%
mod important	7 21.88%	12 37.50%	3 9.38%	7 21.88%	7 21.88%	9 28.13%	11 34.38%	12 37.50%	11 34.38%
extreme important	23 71.88%	17 53.13%	26 81.25%	4 12.50%	21 65.63%	21 65.63%	6 18.75%	7 21.88%	7 21.88%
Total	32	32	29	26	32	31	31	30	30

* All percentages are relative to the total of 32 governments.

4. Part D: Financing

In part D of the questionnaire I asked the 32 government officials about their governments' capital financing behavior and reliance upon different borrowing (i.e. Pay-Use) as well as nonborrowing (i.e. Pay-Go) methods of capital financing. Overall, it appears that these governments rely on nonborrowing slightly more than on borrowing methods. While only 18.75 percent of sample governments reported that they *usually/always* utilize debt, about 47% reported that they *usually/always* utilize nonborrowing methods of capital financing. Survey data also shows that these governments consider borrowing and nonborrowing capital financing methods as substitutes. Table XXXIII illustrates a negative correlation between Pay-Go and Pay-Use method of capital financing. Governments that reported they use Pay-Go are less likely to rely on debt capital financing, and vice versa.

TABLE XXXIII: NEGATIVE CORRELATIONS BETWEEN PAY-GO AND PAY-USE CAPITAL FINANCING METHODS

		Extent gov't uses Pay-Go to finance capital spending				Total
		very little	sometimes	usually	always	
Extent gov't uses Pay-Use (debt) to finance capital spending	not at all / very little	0 0.0%	1 7.7%	3 23.1%	2 100.0%	6 18.7%
	sometimes	2 50.0%	8 61.5%	10 76.9%	0 0.0%	20 62.5%
	usually	0 0.0%	4 30.8%	0 0.0%	0 0.0%	4 12.5%
	always	2 50.0%	0 0.0%	0 0.0%	0 0.0%	2 6.3%
Total		4 100.0%	13 100.0%	13 100.0%	2 100.0%	32 100.0%

chi sq $\chi = 39.75, p=.00$
 gamma $\gamma = -0.83$

When asked about different methods of borrowing, the sample relied most on General Obligation (GO) bonds followed by revenue bonds. Table XXXIV presents sample governments' reliance upon different methods of borrowing. Also, table XXXV indicate that the sample

considers these two borrowing methods as substitutes when making capital financing decisions, meaning that governments that rely more on GO bonds for capital financing, rely less on revenue bonds, and vice versa.

TABLE XXXIV: RELIANCE ON DIFFERENT METHOD OF PAY-USE CAPITAL FINANCING

Responses	GO Bond	Rev Bond	Other Bonds	Loan/Crdit	IEPA
Never	2 7.69%	5 19.23%	11 42.31%	8 30.77%	0 0.00%
Rarely	1 3.85%	6 23.08%	8 30.77%	8 30.77%	1 3.85%
Sometimes	10 38.46%	11 42.31%	7 26.92%	8 30.77%	2 7.69%
Usually	9 34.62%	2 7.69%	0 0.00%	2 7.69%	2 7.69%
Always	4 15.38%	2 7.69%	0 0.00%	0 0.00%	1 3.85%
Total	26 100.00%	26 100.00%	26 100.00%	26 100.00%	6 23.08%

* All percentagess are relative to total number of governments that *sometimes* , *usually* , or *always* issue debt as defined by question D1

TABLE XXXV: GENERAL OBLIGATION (GO) AND REVENUE BONDS AS CAPITAL FINANCING METHODS AMONG THE SAMPLE GOVERNMENTS

		Extent gov't uses GO debt to finance capital spending					Total
		never	rarely	sometimes	usually	always	
Extent gov't uses Revenue bond to finance capital spending	never	0 0.0%	0 0.0%	1 10.0%	2 22.2%	2 50.0%	5 19.2%
	rarely	0 0.0%	0 0.0%	1 10.0%	4 44.4%	1 25.0%	6 23.1%
	sometimes	1 50.0%	0 0.0%	8 80.0%	2 22.2%	0 0.0%	11 42.3%
	usually	0 0.0%	1 100.0%	0 0.0%	1 11.1%	0 0.0%	2 7.7%
	always	1 50.0%	0 0.0%	0 0.0%	0 0.0%	1 25.0%	2 7.7%
Total		2 100.0%	1 100.0%	10 100.0%	9 100.0%	4 100.0%	26 100.0%

chi sq $\chi = 72.38, p=.00$
gamma $\gamma = 0.15$

Finally, question D4 asks about governments' reliance upon different nonborrowing capital financing methods. Data shows that the majority of interviewed governments rely most on general and earmarked taxes, followed by state and federal grants and fund reserves. As table XXXVI illustrates, Tax Increment Financing (TIF), impact fees, and Public-Private Partnership (PPP) are among the least popular non-borrowing methods of capital financing among the sample governments.

TABLE XXXVI: RELIANCE ON DIFFERENT METHOD OF PAY-GO CAPITAL FINANCING

Responses	Earmarked Tax	Service Charge	General Tax	State Grant	Federal Grant	Fund Balance	TIF	Impact Fee	PPP	Revolving Fund
Never	4 14.29%	4 14.29%	1 3.57%	0 0.00%	1 3.57%	1 3.57%	1 3.57%	7 25.00%	16 57.14%	6 21.43%
Rarely	5 17.86%	4 14.29%	5 17.86%	1 3.57%	1 3.57%	6 21.43%	7 25.00%	7 25.00%	10 35.71%	7 25.00%
Sometimes	6 21.43%	9 32.14%	8 28.57%	16 57.14%	17 60.71%	14 50.00%	14 50.00%	12 42.86%	2 7.14%	9 32.14%
Usually	8 28.57%	10 35.71%	10 35.71%	9 32.14%	7 25.00%	6 21.43%	5 17.86%	1 3.57%	0 0.00%	5 17.86%
Always	5 17.86%	1 3.57%	4 14.29%	2 7.14%	2 7.14%	1 3.57%	1 3.57%	1 3.57%	0 0.00%	1 3.57%
Total	28 100%	28 100%	28 100%	28 100%	28 100%	28 100%	28 100%	28 100%	28 100%	28 100%

* All percentages are relative to total number of governments that use 'non-borrowing' methods *sometimes*, *usually*, or *always* as defined by question D3

5. Part E: Crisis/Disaster Management

This part of the questionnaire investigated whether and to what extent interviewed governments are prepared to tackle disasters/crises if and when such disasters occur. Collected data shows that 93.75% of all governments have a form of 'emergency plan' in place laying out strategies for when disasters occur. However, only two-third (66.67%) of governments who have an emergency plan set aside financial resources (similar to 'Rainy Day Fund' at the state level of

government) such as designated fund balance to tackle flooding/disasters/crisis, while the remaining one-third would not be financially prepared if/when such disasters occur.

6. Part F: Economic Development and Capital Asset Quality

The final part of the survey questionnaire investigated the level of land development and quality of capital assets in the sample. Taken all together, the sample governments are mostly developed with little underdeveloped lands, consider economic development an important undertaking, and have *average* quality capital assets.

Question F1 enquired about the level of land development in the sample governments. 56.25 percent of sample governments reported that they are *mostly* developed while 34.38 percent consider themselves *fully developed* and '*built out*'. The remaining 9.38 percent of respondents considered their governments to have *only some lands* developed.

Question F2 investigated the level of underdeveloped lands in these government. 59.38 percent of governments consider *only some of their land* to be underdeveloped, 31.25 percent consider *very little of their land* to be underdeveloped, and 9.38 percent consider *most land* to be underdeveloped in their jurisdictions.

Table XXXVII reveals an interesting observation regarding the level of development in the sample communities. Survey data show that compared to less developed governments, more developed communities tend to focus more on *replacement* of existing and *building new* infrastructure while focus less on *maintenance* of existing infrastructure.

TABLE XXXVII: CORRELATIONS BETWEEN LEVEL OF LAND DEVELOPMENT AND DIFFERENT AREAS OF CAPITAL SPENDING

		Amount of developed land			Total
		only some land	most land	built out, no land	
% capital spending to major maintenance	0-33	0 0.0%	7 38.9%	7 63.6%	14 43.8%
	40-50	1 33.3%	8 44.4%	1 9.1%	10 31.3%
	75	2 66.7%	3 16.7%	3 27.3%	8 25.0%
% capital spending to replacement	20-34	3 100.0%	9 50.0%	4 36.4%	16 50.0%
	50	0 0.0%	7 38.9%	5 45.5%	12 37.5%
	75-80	0 0.0%	2 11.1%	2 18.2%	4 12.5%
% capital spending to new infrastructure	0-10	2 66.7%	8 44.4%	6 54.5%	16 50.0%
	25-33	1 33.3%	9 50.0%	4 36.4%	14 43.8%
	50	0 0.0%	1 5.6%	1 9.1%	2 6.3%
TOTAL		3 100.0%	18 100.0%	11 100.0%	32 100.0%

The sample governments consider economic development mostly as an important undertaking. When asked about the importance of economic development relative to other tasks undertaken by governments, 43.75% of interviewees noted that their governments consider economic development (relative to other services provided by the government, such as police or public works) as *important*, while 21.88% reported their municipalities consider it as *extremely important*. 31.25% of governments consider economic development as *somewhat important* and one government consider it as *not very important*. Table XXXVIII also shows that less developed governments tend to hold economic development more important.

TABLE XXXVIII: IMPORTANCE OF ECONOMIC DEVELOPMENT AMONG GOVERNMENTS WITH DIFFERENT LEVELS OF LAND DEVELOPMENT

		Amount of developed land			Total
		only some land	most land	built out, no land	
Importance of Economic Development	not very / somewhat important	0 0.0%	5 27.8%	6 54.5%	11 34.4%
	important	1 33.3%	10 55.6%	3 27.3%	14 43.8%
	extremely important	2 66.7%	3 16.7%	2 18.2%	7 21.9%
Total		3 100.0%	18 100.0%	11 100.0%	32 100.0%

chi sq $\chi = 8.47, p=.21$
gamma $\gamma = -0.45$

Since economic development generates a considerable stream of revenues for less developed communities, these governments tend to hold economic development very important. The interviewee from one of the less developed communities in the sample noted that “... *long-term survivability* [of a government] *is based upon economic development*. Once [the government] *stagnate in economic development department*, costs will continue to rise, and [it] *will not have additional revenue to meet the demands*.”

Finally, the last question of the survey (i.e. question F4) enquired about the overall physical condition of municipal capital assets. Table XXXIX shows that among all surveyed government, *parks and recreation areas*, *water treatment and reclamation*, and *water systems* are in better physical shape and form, while *storm water drainage*, *sewer systems*, *parking lots*, and *public buildings* have the worst physical conditions among all municipal capital assets listed in table XXXIX.

TABLE XXXIX: OVERALL QUALITY OF CAPITAL ASSETS IN SAMPLE GOVERNMENTS

Capital Asset	Overall quality of the capital asset					Total
	F	D	C	B	A	
Streets and roads	0 0.00%	4 12.50%	10 31.25%	13 40.63%	5 15.63%	32 100.00%
Public buildings	0 0.00%	3 9.38%	11 34.38%	14 43.75%	4 12.50%	32 100.00%
Water systems	0 0.00%	1 3.33%	9 30.00%	12 40.00%	8 26.67%	30 100.00%
Sewer systems	0 0.00%	1 3.33%	12 40.00%	15 50.00%	2 6.67%	30 100.00%
Parks and rec.	0 0.00%	1 4.76%	2 9.52%	11 52.38%	7 33.33%	21 100.00%
Public transit system	0 0.00%	1 8.33%	2 16.67%	6 50.00%	3 25.00%	12 100.00%
Parking lots	0 0.00%	3 10.00%	12 40.00%	11 36.67%	4 13.33%	30 100.00%
Storm water drainage	0 0.00%	3 9.38%	17 53.13%	11 34.38%	1 3.13%	32 100.00%
Water treatment	0 0.00%	1 5.26%	1 5.26%	12 63.16%	5 26.32%	19 100.00%
Vehicles	0 0.00%	0 0.00%	3 60.00%	1 20.00%	1 20.00%	5 100.00%

C. Survey of 32 Public Officials: Major Themes and ‘Stories’

The third and last section of this chapter presents a total of five recurring themes and ‘stories’ emerged from the overall results of the survey analysis. Overall, the sample governments mostly have comprehensive and professional approach to capital budgeting. However, the indirect impacts of elected officials on capital decision-making process are undeniable, while citizens and end-users are noticeably absent in the process. Also, larger and/or wealthier governments are more likely to follow a comprehensive and forward-looking approach to capital budgeting. Following, each one of the five themes are discussed in more details.

1. Strong and Indirect Impact of Elected Officials on Capital Budgeting

Based on the responses received from the interviewees, mayors and councilmembers have a strong impact on capital spending and financing decisions, although they are less likely to be *directly* involved in the process. As an example of elected officials’ strong influence on capital budgets, the interviewees consider *desire of elected officials* as the second most influential factor affecting municipal capital spending and financing decisions (please refer to table XXXI). Based on table XXXI, more than 53 percent of the interviewees consider desire of elected officials influencing capital decisions to a *great* extent, while 47 percent consider such desires to influence capital decisions to *some* extent. Additionally, table XXXII shows that more than 93 percent of interviewees consider mayors, and more than 90 percent consider council members, as either moderately or extremely important in capital spending and financing decisions.

Regarding elected officials’ *indirect* impacts on capital budgets, as table XXIX reflected, despite their heavy influence on the budgeting process, about 60 percent of both mayors and councilmembers are *not* part of the DCPT in governments that have such teams. Also, table XL

indicates that council members try to influence capital spending and financing decisions mainly through contact with the staff from public works and other enterprise units, indicating these officials' indirect impacts on the capital budgeting process.

TABLE XL: METHODS THROUGH WHICH THE BOARD INFLUENCES THE CAPITAL SPENDING AND FINANCING DECISIONS

Response	Method		
	Public Hearing on the Budget	Public Hearing on Specific Projects	Direct Contact with the Public Works Staff
No	10 31.25%	15 46.88%	4 12.50%
Yes	22 68.75%	17 53.13%	28 87.50%
Total	32 100%	32 100%	32 100%

2. Little Public/End-user Presence in Municipal Capital Budgeting

Survey data show that citizens and end users (both businesses and residents) are mostly left out of the municipal capital decision-making process. Perhaps, this should make sense as the capital budgeting is considered (by many of the interviewees) more of a 'professional' undertaking and less of a 'democratic' matter. The interviewee from one city noted that their projects need to be justified by (and based on the recommendations of) city engineers and not just what the General Public demands. Public official interviewed in another city also mentioned that their capital projects are done systematically: "... *if a number of residents want a road done, but there's not time to do that, we would not do that. So, it's not meant to minimize the importance of [citizens' participation]. It's just that our public projects are, you know, more data driven. So, it's not just public request*".

Based on table XXIX, only 9 percent of governments involve end users in the capital planning teams. Also, most interviewees consider both the general public and end users (residents and businesses) only *slightly/moderately* important in capital financing and spending

decisions (please refer to table XXXII). Not only are citizens and end-users basically “sidelined” in capital decision-making process, but also their preferences are not sufficiently reflected in capital plans, either. In fact, more than 87 percent of governments consider citizens’ preferences about capital spending/financing to be reflected in capital plans to *small/some* extent. When asked about various methods through which citizens partake in capital budgeting process, interviewees noted that citizens mostly voice their “capital related” concerns through contact with the councilmembers, while direct participation in capital planning is, by far, the least utilized method through which citizens influence municipal capital spending/financing decisions (table XLI).

TABLE XLI: METHODS THROUGH WHICH CITIZENS INFLUENCE THE CAPITAL SPENDING AND FINANCING DECISIONS

Response	Method				
	Participate in Capital Planning	Public Hearing on the Budget	Public Hearing on Specific Projects	Direct Contact with the Public Works Staff	Direct Contact with Board Members
No	28 87.50%	12 37.50%	12 37.50%	4 12.50%	1 3.13%
Yes	4 12.50%	22 68.75%	22 68.75%	28 87.50%	31 96.88%
Total	32 100%	32 100%	32 100%	32 100%	32 100%

3. Overall, A Comprehensive Approach to Capital Budgeting

Looking at the survey data as a whole, it seems that the sample governments follow a comprehensive approach to capital budgeting. 56.25 percent of governments consider capital spending extremely important (relative to operational spending), and the exact same percentage of interviewees also consider their governments’ capital spending driven by a holistic view of capital needs in all areas of government.

Regarding planning and documenting the capital budgeting process, more than 80 percent of all interviewed governments have a CIP with at least 5 years of planning, and more than 90 percent of them update their plans annually. Additionally, 53.13 percent of interviewed

governments produce a PIP, 76.47 percent of which update their plan every three years or less. 40.6 percent of governments reported they have a DCPT while another 28.1 percent reported that although they do not have a *dedicated* capital planning team, they put together a separate planning team for major capital projects. Also, a majority of governments include *professional appointees* in capital planning teams (e.g. more than 95 percent CAO and more than 90 percent CFO as table XXIX illustrates), while elected officials' presence in DCPT is very limited (i.e. less than 30 percent for both councilmembers and mayors).

The majority of sample governments also seem to pay a lot of attention to the advice of the Public Works staff and departments that are directly responsible for infrastructure. More than 65 percent of governments reported that they consider the requests from departments responsible for infrastructure (e.g. public works, water, sewer) to drive their capital spending to a *great extent*. Also, 84 (16) percent of governments reported that recommendations of public works staff guide their capital spending/financing decisions to a *great (some)* extent.

Finally, most sampled governments consider industry standards (e.g. GFOA Best Practices) when making capital decisions. 50 percent of interviewed governments consider the impacts of industry standards on municipal capital spending and financing decisions to *some* extent, while another 21.9 percent consider the impacts of such standards on capital decisions to a *great* extent.

4. Poorer Governments tend to be More Cost Sensitive toward Capital

Spending and Financing Decisions

Survey data show that, compared to wealthier communities, poorer governments tend to be more cost sensitive regarding capital spending and financing decisions. Table XLII shows the results of a cross-tabulation between wealth of the government and responses to question C2.

Based on table XLII poorer governments are more likely to assess costs and benefits of financing options when deciding on how to fund capital projects.

TABLE XLII: EXTENT COST/BENEFIT ANALYSIS IMPACTS CAPITAL DECISIONS IN GOVERNMENTS WITH DIFFERENT LEVELS OF WEALTH

		Level of Community Wealth			Total
		Below 61,000	61,000 - 90,000	Above 90,000	
Extent Cost/Benefit Analysis Impacts Capital Decisions	not all projects	1 7.1%	0 0.0%	1 12.5%	2 6.3%
	yes some projects	5 35.7%	9 90.0%	5 62.5%	19 59.4%
	yes all projects	8 57.1%	1 10.0%	2 25.0%	11 34.4%
Total		14 100.0%	10 100.0%	8 100.0%	32 100.0%

chi sq $\chi = 8.1, p=.09$
gamma $\gamma = -0.47$

Tables XLIII, XLIV, and XLV cross tabulate data on the government wealth and responses to question D5. The crosstabulation results show that poorer governments are more likely (than wealthier communities) to let the cost of funding mechanism dictate their capital spending and financing decisions. Moreover, poorer communities are more likely to let Net Present Value (NPV) or the impacts of capital projects on tax base(s) of government guide their capital spending/financing decisions as tables XLIV and XLV illustrate.

TABLE XLIII: EXTENT FUNDING MECHANISM COSTS IMPACTS CAPITAL DECISIONS IN GOVERNMENTS WITH DIFFERENT LEVELS OF WEALTH

		Level of Community Wealth			Total
		Below 61,000	61,000 - 90,000	Above 90,000	
Extent Funding Mechanism Costs Impact Capital Decisions	very little, not at all	2 14.3%	1 10.0%	4 50.0%	7 21.9%
	some extent	6 42.9%	5 50.0%	4 50.0%	15 46.9%
	great extent	6 42.9%	4 40.0%	0 0.0%	10 31.3%
Total		14 100.0%	10 100.0%	8 100.0%	32 100.0%

chi sq $\chi = 7.34, p=.12$
gamma $\gamma = -0.51$

TABLE XLIV: EXTENT NET PRESENT VALUE (NPV) GUIDES CAPITAL DECISIONS IN GOVERNMENTS WITH DIFFERENT LEVELS OF WEALTH

		Level of Community Wealth			Total
		Below 61,000	61,000 - 90,000	Above 90,000	
Extent Capital Spend Decisions Guided by Project NPV	very little, not at all	3 23.1%	3 30.0%	4 57.1%	10 33.3%
	some extent	5 38.5%	6 60.0%	2 28.6%	13 43.3%
	great extent	5 38.5%	1 10.0%	1 14.3%	7 23.3%
Total		13 100.0%	10 100.0%	7 100.0%	30 100.0%

chi sq $\chi = 4.98, p=.29$
gamma $\gamma = -0.44$

TABLE XLV: EXTENT IMPACTS OF THE PROJECTS ON TAX BASE(S) OF GOVERNMENT GUIDE CAPITAL DECISIONS IN GOVERNMENTS WITH DIFFERENT LEVELS OF WEALTH

		Level of Community Wealth			Total
		Below 61,000	61,000 - 90,000	Above 90,000	
Extent Capital Spend Decisions Guided by Impacts on Govt Tax Base	very little, not at all	0 0.0%	2 20.0%	3 37.5%	5 16.1%
	some extent	6 46.2%	3 30.0%	4 50.0%	13 41.9%
	considerable extent	0 0.0%	1 10.0%	0 0.0%	1 3.2%
	great extent	7 53.8%	4 40.0%	1 12.5%	12 38.7%
Total		13 100.0%	10 100.0%	8 100.0%	31 100.0%

chi sq $\chi = 9.27, p=.16$
gamma $\gamma = -0.54$

5. Smaller Governments Have Lower Capacity for Capital Budgeting

Low capital budgeting capacity of small governments in the sample is the final theme discussed in this chapter. Overall, survey data show that due to their limited administrative capacity, smaller governments are less likely (than larger municipalities) to adopt a comprehensive, professional, and forward-looking approach to capital budgeting.

As opposed to smaller governments in the sample that have low fiscal and administrative capacity and tend to be *reactive* in capital budgeting, larger governments have enough capacity to take a more *proactive* approach to capital budgeting. For instance, the public official from the one of the largest cities in the sample cautioned against an “*operation creep*” that could happen if

there is not an agreed-upon capital-operation expense ratio in the government: “*we need to have an operating-capital expense ratio goal. If I only got a dollar, how much am I spending on operations versus capital? We should know what’s our goal. Some years you won’t need [to spend so much on capital], but if you continue to let operating expenses eat away your capital, you know what happens.*”

On the contrary, the public official in one of the smallest cities in the sample told me “*you can budget all you want, you know, but when you have zero dollars in the budget it doesn’t matter...*”. Comparing these two viewpoints could serve very well in contrasting different approaches to capital budgeting in governments with different fiscal and administrative capacities. Table XLVI presents results of a cross-tabulation of government size and survey data on question B2 and shows that 80 percent of smallest governments in the sample (i.e. units with less than \$10 million in 2017 total spending) do not have a separate planning process for capital and operating budgets. Also, a crosstabulation of question B5 and government size in table XLVII shows that 60 percent of the smallest governments reported that they do not have a DCPT, while 80 percent of the largest governments (i.e. units with more than \$75 million in 2017 total spending) reported that they have such planning teams.

TABLE XLVI: WHETHER CAPITAL AND OPERATIONAL PLANNING ARE SEPARATE IN GOVERNMENTS WITH DIFFERENT SIZES

		Spending Size of Government				Total
		Below 10 mil	10 mil - 25 mil	25 mil - 75 mil	Above 75 mil	
Separate Capital & Operating Budget Planning?	no	4 80.0%	0 0.0%	0 0.0%	0 0.0%	4 12.5%
	yes	1 20.0%	11 100.0%	11 100.0%	5 100.0%	28 87.5%
Total		5 100.0%	11 100.0%	11 100.0%	5 100.0%	32 100.0%

chi sq $\chi = 24.69, p=.0$
gamma $\gamma = 1$

TABLE XLVII: WHETHER CASES WITH DIFFERENT SIZES HAVE A DCPT

		Spending Size of Government				Total
		Below 10 mil	10 mil - 25 mil	25 mil - 75 mil	Above 75 mil	
Is there a designated capital planning team?	no	3 60.0%	5 45.5%	2 18.2%	0 0.0%	10 31.3%
	Sort of	1 20.0%	3 27.3%	4 36.4%	1 20.0%	9 28.1%
	yes	1 20.0%	3 27.3%	5 45.5%	4 80.0%	13 40.6%
Total		5 100.0%	11 100.0%	11 100.0%	5 100.0%	32 100.0%

chi sq $\chi = 7.68, p=.26$
 gamma $\gamma = 0.566$

Table XLVIII cross-tabulates government size and data on question B17 and illustrates that smaller communities are less likely to produce a PIP. Moreover, table XLIX (i.e. cross tabulation of government size and data on question C13) shows that industry standards are less likely to influence capital spending and financing decisions in smaller governments, while larger governments (due to their higher fiscal and administrative capacities) are more likely to implement these standards into their capital budgeting process.

TABLE XLVIII: WHETHER GOVERNMENTS WITH DIFFERENT SIZES HAVE A PIP

		Spending Size of Government				Total
		Below 10 mil	10 mil - 25 mil	25 mil - 75 mil	Above 75 mil	
Does govt do Periodic Inspection Plan (PIP)?	no	4 80.0%	8 72.7%	3 27.3%	0 0.0%	15 46.9%
	yes	1 20.0%	3 27.3%	8 72.7%	5 100.0%	17 53.1%
Total		5 100.0%	11 100.0%	11 100.0%	5 100.0%	32 100.0%

chi sq $\chi = 11.26, p=.01$
 gamma $\gamma = 0.8$

TABLE XLIX: EXTENT INDUSTRY STANDARDS INFLUENCE CAPITAL SPENDING AND FINANCING DECISIONS IN GOVERNMENTS WITH DIFFERENT SIZES

		Spending Size of Government				Total
		Below 10 mil	10 mil - 25 mil	25 mil - 75 mil	Above 75 mil	
Extent Industry Standards influence capital spend and finance decisions	not at all	1 20.0%	1 9.1%	2 18.2%	0 0.0%	4 12.5%
	small extent	2 40.0%	1 9.1%	1 9.1%	1 20.0%	5 15.6%
	some extent	2 40.0%	6 54.5%	6 54.5%	2 40.0%	16 50.0%
	great extent	0 0.0%	3 27.3%	2 18.2%	2 40.0%	7 21.9%
Total		5 100.0%	11 100.0%	11 100.0%	5 100.0%	32 100.0%

chi sq $\chi = 6.15, p=.73$

gamma $\gamma = 0.26$

Considering the observations discussed above, it appears that small governments in the sample do not have the capacity to conduct capital budgeting in a comprehensive and professional manner as larger governments can. Table L (i.e. cross tabulation of government size and data on question A1) shows that larger governments in the sample hold capital spending more important (relative to operational spending) compared to smaller units, implying their higher fiscal and administrative capacity for capital budgeting.

TABLE L: IMPORTANCE OF CAPITAL SPENDING IN GOVERNMENTS WITH DIFFERENT SIZES

		Spending Size of Government				Total
		Below 10 mil	10 mil - 25 mil	25 mil - 75 mil	Above 75 mil	
Importance of capital vs operation spending	slightly impt	2 40.0%	0 0.0%	2 18.2%	0 0.0%	4 12.5%
	mod impt	2 40.0%	5 45.5%	2 18.2%	1 20.0%	10 31.2%
	extreme impt	1 20.0%	6 54.5%	7 63.6%	4 80.0%	18 56.3%
Total		5 100.0%	11 100.0%	11 100.0%	5 100.0%	32 100.0%

chi sq $\chi = 10.02, p=0.35$

gamma $\gamma = 0.43$

V. QUALITATIVE COMPARATIVE AND CASE STUDY ANALYSES

A comprehensive descriptive analysis of the survey data was presented in the previous chapter. In the current chapter, I will use Qualitative Comparative Analysis (QCA) and numerous case studies to investigate, first, the causal relationship between various attributes and characteristics of governments and their approach to capital budgeting, and second, the impact of approach to municipal capital budgeting on capital and maintenance spending.

As extensively discussed in the introduction chapter, this research study intends to investigate the following two main research questions: 1) whether governments approach capital budgeting and decision making in a comprehensive / professional (vs. unprofessional / shortsighted) fashion; and 2) whether governments' approach to capital budgeting and decision making affects their level of capital/construction spending.

The remainder of this chapter is divided into three sections. Section A will utilize a Multi-Value QCA (mvQCA) approach as well as numerous case studies to investigate the first research question. Then, in section B a Fuzzy-Set QCA (fsQCA) approach, together with case study analysis, will be applied to investigate the second research question. Lastly, section C will summarize and conclude the current chapter with a discussion on the findings of both QCA analyses.

A. Government Approach to Capital Budgeting

The first research question asks whether governments approach capital budgeting and decision making in a comprehensive / professional (vs. unprofessional / shortsighted) fashion. So, in order to be able to investigate what factors and government attributes lead to professional /

comprehensive approach to capital budgeting (vs. unprofessional / ad-hoc), we first need to know *what* is considered as a comprehensive and professional approach to capital budgeting.

Chapter 2 discussed and compared different approaches to capital budgeting in great length. In order to measure sample governments' approach to capital budgeting, the current study will use a wide range of items and data sources that – taken together – could indicate whether a government approaches capital budgeting and planning in a sound and comprehensive manner. Table I in chapter 2 provided an extensive list of all the items/data sources that is used for examining the sample government's approach to capital budgeting. Although discussing each sample government with respect to all items listed in table I (in chapter 2) is beyond the limited scope of this chapter, table LI below strives to compare and contrast the 32 sample governments based on five important criteria (from among the criteria in table I). These five indicators are importance of capital budgeting in the government, whether government has a dedicated capital planning team, has an informative CIP and follows through with the capital plan, has an informative PIP and follows through with the inspection plan, and prepares high quality and informative fiscal and budgetary documents. Table LI below list these five indicators and how the sample governments fared in each category as well as overall.

TABLE LI: OVERALL APPROACH OF SAMPLE GOVERNMENTS TO CAPITAL BUDGETING AND PLANNING

Case #	Importance of Capital Budgeting	Gov't has DCPT*	Gov't has informative CIP**	Gov't has informative PIP***	Fiscal/Budgetary Documents Presentation Quality	Approach to Capital Budgeting and Planning
1	High	yes	yes	yes	High	Professional/Comprehensive
2	Medium	no	yes	no	Low	Unprofessional/Shortsighted
3	High	no	yes	no	High	Professional/Comprehensive
4	High	yes	yes	no	High	Professional/Comprehensive
5	Medium	no	yes	yes	High	Professional/Comprehensive
6	High	no	yes	no	High	Professional/Comprehensive
7	Low	no	yes	no	low	Unprofessional/Shortsighted
8	Medium	no	no	yes	Low	Unprofessional/Shortsighted
9	Medium	yes	yes	yes	High	Professional/Comprehensive
10	High	yes	yes	no	High	Professional/Comprehensive
11	High	no	yes	no	High	Professional/Comprehensive
12	High	yes	yes	yes	High	Professional/Comprehensive
13	High	yes	yes	yes	High	Professional/Comprehensive
14	High	yes	yes	yes	High	Professional/Comprehensive
15	High	no	yes	yes	High	Professional/Comprehensive
16	High	Sort of	yes	yes	Low	Professional/Comprehensive
17	Low	Sort of	no	no	Low	Unprofessional/Shortsighted
18	Low	no	no	no	Low	Unprofessional/Shortsighted
19	Medium	yes	yes	yes	High	Professional/Comprehensive
20	High	yes	yes	yes	High	Professional/Comprehensive
21	High	Sort of	yes	no	High	Professional/Comprehensive
22	Low	Sort of	no	no	Low	Unprofessional/Shortsighted
23	Medium	yes	no	no	Low	Unprofessional/Shortsighted
24	Low	yes	yes	no	Low	Unprofessional/Shortsighted
25	High	Sort of	yes	no	High	Professional/Comprehensive
26	Medium	Sort of	yes	no	Low	Unprofessional/Shortsighted
27	High	Sort of	yes	yes	High	Professional/Comprehensive
28	High	Sort of	yes	yes	High	Professional/Comprehensive
29	Medium	yes	no	yes	Low	Unprofessional/Shortsighted
30	Medium	Sort of	yes	yes	High	Professional/Comprehensive
31	High	yes	yes	yes	High	Professional/Comprehensive
32	High	no	yes	no	High	Professional/Comprehensive

* Dedicated Capital Planning Team

** Capital Improvement Plan

*** Periodic Inspection Plan

**** Data on all indicators *except* for Importance of Capital Budgeting and Fiscal/Budgetary Documents Presentation Quality collected from the survey data. Data on Fiscal/Budgetary Documents Presentation Quality collected from reviewing governments' archival records and documentations. Data on Importance of Capital Budgeting collected using a thorough and comprehensive review of the survey data (specifically question A1), government archival records, and news reports.

Using data collected from the interviews as well as a thorough analysis and investigation of a wide range of government fiscal/financial documents, city council minutes, newspapers and online resources such as official government websites, Table LI illustrates whether sample governments follow a comprehensive/professional approach to capital budgeting and planning. It is worth noting that the process of assigning outcomes (i.e. Professional/Comprehensive vs. Unprofessional/shortsighted) to each one of the 32 sample governments in table LI was a subjective process and I took a holistic approach and considered all the factors and decided (based on all the collected data and documents as well as theories and frameworks discussed in chapter 2) which governments have a professional and comprehensive approach to capital budgeting and planning and which governments do not.

As table LI indicates, twenty-two municipal governments in the sample approach capital budgeting and planning on a professional and comprehensive way, while ten governments approach such planning and budgeting on a shortsighted and unprofessional manner. Knowing which governments follow a comprehensive/professional approach to capital budgeting and planning is only half the answer to the first research question. We also need to know what are the characteristics of the governments that follow such pass to capital budgeting and whether there is a *causal* relationship between government attributes and different approaches to capital budgeting and planning.

The 32 sample governments in this study are carefully selected based on their characteristics and attributes for the QCA analysis. These attributes are administrative form of government, population growth rate, level of community wealth, level of residential areas (as a percentage of total lands in a jurisdiction), and operational spending, which indicates the size of government.

Table LII shows that compared to sample governments with an unprofessional approach to capital budgeting, municipalities that approach capital budgeting and planning in a formal and comprehensive manner are on average more populated, wealthier, larger in land area, and with much higher EAV per square-mile and operational spending sizes. Also, as table LIII shows, compared to the former group of municipalities, the latter group is more likely to have an at-large form of council, a manager as CAO, an appointed CFO, and to have home-rule status.

TABLE LII: DEMOGRAPHIC CHARACTERISTICS OF SAMPLE GOVERNMENTS WITH AND WITHOUT COMPREHENSIVE/PROFESSIONAL APPROACH TO CAPITAL BUDGETING (AVERAGE VALUES)

Municipal governments	Population (2017)	% Population Change (2000-17)	Median HHI (in 2017 \$)	% Pop w/ Managerial Positions (2017)	Land Area (Sq. Mile)	% Residential EAV (2016)	% Commercial EAV (2016)	% Industrial EAV (2016)	EAV per Sq Mile (in 2016 '000 USD)	Operational Spending (in 2017 '000 USD)
Survey Sample (N = 32)	34,496	6.61	74,095	41.04	12.42	75.94	17.04	5.95	180,000	47,016
Gov'ts with Prof. Approach to Cap Budgeting (N = 22)	45,085	6.81	76,422	42.00	15.74	74.85	17.57	6.27	197,000	62,112
Gov'ts with Unprof. Approach to Cap Budgeting (N = 10)	11,200	6.17	68,977	38.93	5.11	78.32	15.95	5.27	141,000	13,803
Pr(T > t)	0.003*	0.8802	0.4767	0.605	0.0016*	0.5453	0.6491	0.7799	0.4673	0.0013*

* Statistically significant at 95% confidence level.

TABLE LIII: GOVERNANCE STRUCTURE FOR SAMPLE GOVERNMENTS WITH AND WITHOUT COMPREHENSIVE / PROFESSIONAL APPROACH TO CAPITAL BUDGETING: 2017

Municipal Governments	Form of Council		Form of CAO			Form of CFO		Home Rule		Traditional Form of Government		
	% At large	% Ward	% Mayor	% Administrator	% Manager	% Elected	% Appointed	% Yes	% No	% C-M	% Weak M-C	% Strong M-C
Survey Sample (N = 32)	53	47	16	34	50	16	84	50	50	50	34	16
Gov'ts with Prof. Approach to Cap Budgeting (N = 22)	59	41	14	14	72	0	100	64	36	72	14	14
Gov'ts with Myopic Approach to Cap Budgeting (N = 10)	40	60	20	80	0	50	50	20	80	0	80	20

* Council-Manager (C-M); Mayor-Council (M-C)

Considering the aforementioned differences in characteristics and attributes of these two groups of government, a qualitative comparative analysis is warranted in order to examine whether there is any causal relationship between characteristics of governments and their approach to capital budgeting and planning. Using the five government attributes of interest as well as capital budgeting approach data presented in table LI, a truth table is prepared and presented in table LIV below.

TABLE LIV: MULTI-VALUE TRUTH TABLE

Case #	Form of Government (G)	Population Change (C)	Median HHI (M)	Residentialness (P)	Operating Spending Size (O)	Approach to Capital Budgeting and Planning (Outcome)
1	5	4	2	2	4	1
2	2	3	1	1	2	0
3	1	2	2	3	2	1
4	1	2	3	3	3	1
5	1	2	1	1	2	1
6	1	3	3	3	1	1
7	2	3	2	3	1	0
8	4	2	2	3	2	0
9	3	3	1	1	3	1
10	1	2	1	1	2	1
11	5	2	1	1	3	1
12	3	1	1	1	3	1
13	1	3	3	3	4	1
14	1	2	2	3	4	1
15	3	2	3	3	3	1
16	4	3	2	1	3	1
17	2	2	1	1	1	0
18	4	3	2	3	1	0
19	1	3	1	1	3	1
20	1	2	3	3	3	1
21	1	2	3	3	2	1
22	3	2	1	1	2	0
23	5	3	2	3	2	0
24	2	2	3	3	2	0
25	1	2	1	1	3	1
26	4	1	1	2	2	0
27	4	1	1	1	4	1
28	1	3	2	3	3	1
29	4	3	2	2	1	0
30	4	3	1	1	3	1
31	5	2	1	1	4	1
32	1	2	3	3	2	1

* The following five causal conditions will be used in the mvQCA analysis:

- Form of Government (G):
 - 5 different ordinal values: 1 = manager/at-large; 2 = admin/at-large; 3 = manager/ward; 4 = admin/ward; and 5 = strong mayor/ward
- Population Change (C):
 - 4 different ordinal values: 1 = $X < -7\%$; 2 = $-7\% < X < 7\%$; 3 = $7\% < X < 30\%$; and 4 = $X > 30\%$.
- Median HHI (M):
 - 3 different ordinal values: 1 = $X < \$61,000$; 2 = $\$61,000 < X < \$90,000$; and 3 = $X > \$90,000$
- Level of Residentialness (P):
 - 3 different ordinal values: 1 = $X < 70\%$; 2 = $70\% < X < 85\%$; and 3 = $X > 85\%$
- Operating Spending Size (O):
 - 4 different ordinal values: 1 = $X < \$10 \text{ Mil}$; 2 = $\$10 \text{ Mil} < X < \25 Mil ; 3 = $\$25 \text{ Mil} < X < \75 Mil ; and 4 = $X > \$75 \text{ Mil}$

** Approach to Capital Budgeting and Planning is the Outcome of the mvQCA analysis (1= Professional/Comprehensive; 0= Unprofessional/Shortsighted)

Table VI in chapter 3 demonstrated (in detail) how the five causal conditions of interest are transformed into ordinal variables. As the footnote of table LIV indicates, form of government (labeled as *G* in the table) has five ordinal values based on form of council (ward vs. at-large) and form of CAO (manager, administrator, or strong mayor). Population change (labeled as *C* in the table) is clustered into four ordinal categories of less than -7%, more than -7% but less than 7%, more than 7% but less than 30%, and more than 30%.

Median household income (labeled as *M* in the table) and level of residentialness (labeled as *P* in the table) both have three categories of ordinal values. For median HHI these categories are less than \$61,000, more than \$61,000 but less than \$90,000, and more than \$90,000. For level of residentialness, the three ordinal categories are less than 70%, more than 70% but less than 85%, and more than 85%. Finally, as table LIV illustrates, operating size of sample governments has four ordinal values: less than \$10 million, more than \$10 million but less than \$25 million, more than \$25 million but less than \$75 million, and more than \$75 million.

As shown in the multi-value truth table in table LIV, the five government attributes will perform as causal conditions in the analysis and the outcome includes binary data on whether governments follow a comprehensive/professional approach to capital budgeting. Due to the multi-value nature of all five causal conditions listed in the truth table, a multi-value QCA (mvQCA) approach – that allows for the set conditions to incorporate multiple ordinal values – will be utilized to investigate the first research question.

Chapter 3 illustrated the Boolean reduction analysis used by the QCA methodology through an example. In that simplified example, the truth table consisted of three *binary* conditions and a *binary* outcome. Therefore, a csQCA technique, that only allows for binary data representation for both the causal conditions and the outcome, was utilized for Boolean reduction

in that example. Although this section will utilize a mvQCA technique, the overall Boolean reduction procedure mimics the example presented in chapter 3. However, due to extremely high level of complexity associated with mvQCA procedure, rather than manually solving for the parsimonious solution, this chapter has used a computer software (i.e. Tosmana version 1.61) in order to produce parsimonious solution(s).

Using the truth table in table LIV, two rounds of mvQCA analysis is performed in this section. First, in subsection 1, a mvQCA minimization analysis was done for configurations with professional/comprehensive approach to capital budgeting as the outcome of interest (i.e. cases indicated by [1] outcome in table LIV). Then, in subsection 2, a very similar analysis is performed for configurations with unprofessional/ad-hoc approach to capital budgeting as the outcome of interest (i.e. cases indicated by [0] outcomes in table LIV).

1. Attributes of Cases with *Professional Approach to Capital Budgeting*

The following parsimonious solution presents results of the first round of minimization analysis on configurations with outcomes equal to 1 (i.e. professional and comprehensive approach to capital budgeting and planning) in the truth table in table LIV.

Result(s)	Legend
<p>$G_{1,3} + O_{3,4} \rightarrow \text{Outcome (1)}$</p> <p>Notes:</p> <ul style="list-style-type: none"> (+) means <i>logical OR</i> $G_{1,3}$ means G_1 or G_3 $O_{3,4}$ means O_3 or O_4 	<p>G = Form of Government</p> <ol style="list-style-type: none"> 1) Municipal manager and council elected at-large 2) Municipal administrator and council elected at-large 3) Municipal manager and council elected by ward 4) Municipal administrator and council elected by ward 5) Strong mayor and council elected by ward <p>C = Population Change 2000-17</p> <ol style="list-style-type: none"> 1) $X < -7\%$ 2) $-7\% < X < 7\%$ 3) $7\% < X < 30\%$ 4) $30\% < X$ <p>M = Median Household Income 2017</p> <ol style="list-style-type: none"> 1) $X < \\$61,000$ 2) $\\$61,000 < X < \\$90,000$ 3) $\\$90,000 < X$ <p>P = Level of Residentialness 2016</p> <ol style="list-style-type: none"> 1) $X < 70\%$ 2) $70\% < X < 85\%$ 3) $85\% < X$ <p>O = Operating spending size 2017</p> <ol style="list-style-type: none"> 1) $X < \\$10 \text{ million}$ 2) $\\$10 \text{ million} < X < \\25 million 3) $\\$25 \text{ million} < X < \\75 million 4) $\\$75 \text{ million} < X$ <p>Outcome (1) = Professional Approach to Cap Budgeting</p>

As the result in this solution indicates, there are two sets of conditions (i.e. prime implicants) that when present, represent sufficient conditions for the outcome of interest (i.e. professional/comprehensive approach to capital budgeting) to occur within the 32 sample governments. These two sets of conditions are: 1) sample government has a manager as CAO (with either a ward or an at-large form of council); *or* 2) sample government is large (i.e. with 2017 per-capita operational spending between \$25 million and \$75 million) or very large (i.e. with 2017 per-capita operational spending more than \$75 million).

a. First prime implicant: sample governments with manager as CAO have a professional approach to capital budgeting.

The first prime implicant in the mvQCA parsimonious solution (i.e. $G_{1,3}$) represents sample governments that have an appointed manager (not administrator) and the council is elected at large or by ward. In total, the following sixteen governments have the first prime implicant: cases number 3,4,5,6,9,10,12,13,14,15,19,20,21,25,28, and 32. These governments represent 85 percent of the 19 governments in the sample that have a professional approach to capital budgeting. Based on theories and frameworks discussed in chapter 2, the expectation is that governments that are run by appointed managers are more likely to have a professional approach to capital budgeting compared to (otherwise similar) governments with an elected CAO. Interestingly, investigation of cases indicated by this prime implicant provides support for this claim. Overall, sample governments with a manager as CAO all have a professional approach to capital budgeting and it appears that managers have a meaningful impact on sample governments' professional approach to capital budgeting. Following, for demonstration purposes I have taken a closer look at five (out of sixteen) government that are represented by the first prime implicant (i.e. cases number 5,10,3,6, and 32).

Governments number 5 and 10 are very similar in that both have the same manager/at-large form of government, have experienced moderate population growth from 2000 to 2017, are among the least wealthy and least residential in the sample, and have relatively small 2017 operating spending sizes. However, interviewing them, I learned that both governments have a sound and professional approach to capital budgeting and planning, indicating that levels of wealth and residentialness in sample governments may not play a significant role in how they approach municipal capital budgeting and planning.

Interviewing government number 5, I learned that the manager and finance director lead the capital budgeting endeavors, and once-a-year the government holds a “2-day planning retreat” that all the elected officials as well as staff attend, and a lot of capital planning discussions get brought up in these planning retreats.

Planning for capital is held to the highest degree of importance in government number 5. The interviewee mentioned that the overall approach to capital budgeting and planning is a “bottom-up” process in that each department puts together a unique and separate capital plan that addresses the needs of each particular department. After all departments prepared their respective capital plan, then the CIP is put together by the manager with the help of the finance director.

It seems that the government puts a lot of emphasis on the “2-day planning retreat”. When asked about the importance of the councilmembers in planning, the interviewee noted that although the council is important, this planning retreat is the main venue through which they participate in capital planning process for the upcoming year and, eventually, it is the manager and the CFO who “*set the capital budgeting tone*” when setting the agenda for the “2-day planning retreat” and preparing the comprehensive capital plan. Additionally, the interviewee mentioned that the manager heavily emphasizes the importance of a long-term capital plan that

lays out the infrastructure maintenance needs of the government currently and in the future. The capital planning in government number 5 follows a professional and comprehensive approach guided by regularly updated CIP and strategic plan.

Very similar trend of professional approach to capital budgeting was observed in government number 10. The interviewee stated that their government holds capital spending and planning for capital to the same level of importance as operating budgeting, if not higher. Annually, they spend 2-3 million to maintain and upgrade their roads, with another 800K for other capital assets such as dump trucks, fire trucks, police cars, etc. Unlike government number 5 that has a bottom-up approach to capital budgeting, government number 10 has a centralized and top-down approach where the planning team (including the manager and finance director) consult department heads and prepare the CIP for the whole government.

Manager and CFO hold the central roles in capital budgeting and planning processes in government number 10. Although both mayor and the council have an impact on the capital budgeting process, such direct impact is minimal as these elected officials are not part of the capital planning team and only voice their concerns through contacts with the manager, finance director, and department heads, or through other venues such as public hearings on the budget where both capital and operating spending categories are discussed.

Similar to government number 5, government number 10 also produces a very informative CIP that lays out details about different major projects for the future. Despite being among the poorest communities in the sample, both governments reported that they have a healthy fund balance reserves, and that both invest in their infrastructure and community fairly regularly.

Government number 3 is a moderately wealthy and highly residential community that similar to both governments 5 and 10 is among the smaller communities in the sample. Due to high focus on building new infrastructures, government number 3 is a built-out community with little to no underdeveloped land. Similar to government number 10, the capital budgeting efforts in government number 3 is mainly led by the manager and the finance director with the consult of the department heads responsible for capital spending (e.g. water and sewer departments).

Through the interview I learned that the current administration has recently hired an engineering firm that constantly examines the condition of their infrastructure and makes comprehensive reports on the condition of various types of capital assets. Using such comprehensive and detailed inventory of capital assets, the government would be able to manage funds to better address infrastructure problems when they arise and stay on top of the problems and have a “proactive” approach to capital spending and budgeting.

Government number 6 is another community that is represented by the first prime implicant in the mvQCA solution. This is a small, wealthy, and highly residential community that is built out and experienced a sharp growth in population between 2000 and 2017. Despite its small size and limited administrative capacity, the government seems to follow a sound and professional approach to capital budgeting and planning thanks to its management team.

The government has little room for development as it is a built-out community with little land underdeveloped. However, recently they have started their replacement projects to make sure their core capital assets will not fail due to lack of maintenance. For example, the interviewee noted that in 2020 they will start redevelopment of a Metra station located in their jurisdiction. Similar to previous cases investigated in this section, capital planning and budgeting in government number 6 is also led by the manager and the finance department while the elected

officials are rarely involved in the planning process and are consulted on capital and infrastructure decisions very infrequently.

The interviewee stated that the current administration invested heavily in regularly assessing the quality of capital assets and including details about projects in their long-term CIP in order to better inform both the elected officials and the public about the capital needs of the community. Additionally, each year the manager requires department heads to provide a 10-year estimates for the capital needs of their department to be included in the CIP document.

Government number 32 is the final case investigated for the first prime implicant in the parsimonious solution. As a very wealthy and highly residential governments that experienced moderate population growth rates during the 2000-17 period, government number 32 is a built-out community with only some lands underdeveloped. Similar to other cases discussed above, government number 32 also has a very professional approach to capital budgeting and planning. Overall, the capital planning and budgeting is run by the manager and the finance department with the mayor's and the council's direct involvement in the decision-making process kept at a minimum.

The capital budgeting process seems to be a top-down process in this government in that departments report their annual estimates for capital project needs to the finance department and the finance director, with the help of the manager, puts together the CIP. Their capital and operating budgeting processes run in parallel but are completely separate processes and as the interviewee put it, they want this to be the case so that the capital planning and budgeting gets the attention it deserves and would not get overshadowed by the operational decision-making process.

Their approach to capital budgeting is very professional in that the managing team requires departments responsible for infrastructure spending to be very specific about their capital needs. They often try to finance their capital spending via debt while building up their fund balance reserves to improve their fiscal flexibility during economic downturns. In fact, this government is among a handful of sample municipalities that have a healthy “rainy-day fund” – set aside for natural, economic, and infrastructure disasters and emergencies – which speaks volume to their level of professionalism in fiscal management as well as capital budgeting.

Reviewing these five cases represented by the first prime implicant, one theme becomes apparent. In all cases, the capital budgeting and planning process is led by the administrators (especially strong managers) while the elected officials often take a back seat and are involved in the process minimally and through venues such as public hearings on the budget. Given the professional approaches of these governments to capital budgeting and decision-making, it appears that the managerial form of government does, in fact, have an impact on government’s approach to capital budgeting, at least among the 32 sample governments.

b. Second prime implicant: large or very large sample governments have a professional approach to capital budgeting.

The second prime implicant in the parsimonious solution on page 8 (i.e. O_{3,4}) indicates sample governments that are large (i.e. 2017 operational spending size between \$25 million and \$75 Million) or very large (i.e. 2017 operational spending size more than \$75 Million). Overall, the following sixteen sample municipalities are represented by the second prime implicant in the parsimonious solution: cases number 1,4,9,11,12,13,14,15,16,19,20,25,27,28,30, and 31. Ten governments have both prime implicants. All governments with a professional approach to capital budgeting have one prime implicant or the other.

The truth table in table LIV shows that these governments have various population sizes, different levels of community wealth, residentialness, and population growth rates during the 2000-17 period. The expectation is that due to their large operating sizes, these governments should have higher fiscal and administrative capacities enabling them to take a more professional approach to capital budgeting and planning. Interestingly, looking closer at each one of the large governments in the sample, this seems to be the case. For demonstration purposes, a closer look at three largest governments in the sample (i.e. cases number 1, 27, and 31) is presented, and the impacts of operating size of government on approach to capital budgeting and planning is examined.

Government number 1 is the largest in the sample. This is an urban municipality that is built-out and is moderately wealthy, residential, and has experienced a sharp population growth during the 2000-17 period. The government considers capital budgeting extremely important and its strong finance team never lets the capital needs of the government get overshadowed by the immediate operating needs and plans. In fact, the interviewee stated that he always preaches government officials about the fact that there needs to be a capital/operation ratio goal to follow in order to avoid “operations creep” that could happen if capital spending and budgeting is neglected: *“we need to have an operating-capital expense ratio goal. If I only got a dollar, how much am I spending on operations versus capital? We should know what’s our goal. Some years you won’t need [to spend so much on capital], but if you continue to let operating expenses eat away your capital, you know what happens.”*

The government has a very strong capital planning team led by the finance director. Interestingly, although this is a strong mayoral city, all planning and budgeting for capital is handled by the finance department and in a very comprehensive manner. The government is

among a handful of sample governments with a 10-year CIP that lays out the details about different capital projects and infrastructure needs of the government for the near and far future. Additionally, the government also produces very informative PIPs for each one of its enterprise units (e.g. water, sewer, roads). The government keeps a complete inventory of capital assets and regularly assesses the condition of these resources. Additionally, as the interviewee noted, their city engineers rank all projects before they come into the CIP document. Therefore, the government has a clear idea as to which project to take on when making capital decisions.

Overall, government number 1 has a very comprehensive and professional approach to capital budgeting and planning informed by industry standards such as the GFOA “best practices” thanks to both its strong finance team and its large fiscal and administrative capacities. A large operating size has given this government so much flexibility in dealing with ups and downs of economy and natural disasters. In response to government’s approach to tackle natural disasters, the interviewee stated that a city the size of government number 1 is large and flexible enough regarding its funds that does not really need to worry about such disasters.

Government number 27 is the second largest government in the sample and is considerably less wealthy and residential compared with government number 1 and experienced almost no population change during the 2000-17 period. Similar to number 1, this is also an almost built-out community where the main focus of capital spending is on maintenance and replacement of existing infrastructure. Overall, the city follows a very comprehensive and professional approach to capital budgeting informed by the industry standards such as GFOA best practices.

Unlike government number 1 where the capital efforts of the government were performed mainly by the finance director and the finance department, in government number 27 city

engineers chair the capital planning team. The government has a very detailed CIP that includes both major and minor capital maintenance items. Also, the government produces various PIPs for different classes of assets. For instance, PIP for roads is a comprehensive plan that is updated every three years, while the PIP for government vehicles is updated annually. Additionally, the government maintains a complete inventory of capital assets and the city engineers survey and assess the condition of capital assets on regular basis.

City engineers' impact and influence in capital planning and budgeting process is so strong that it even outweighs the general public input in the process. The interviewee reported that although the public input is very important and welcomed in the budgeting process, eventually this is a very delicate and complicated process that city engineers, in contact with department heads, need to make a list of projects that should be funded based on the merits of the project, among other factors, rather than based only on what the general public may demand.

The government also produces a strategic plan that lays out the long-term vision for the city and helps shape the capital planning and budgeting. The interviewee also noted that their approach to capital planning is such that each department that is responsible for capital planning consults the city engineers in order to realize their capital needs. Such an approach to capital decision-making clearly highlights the overall professional and methodical style of capital budgeting in government number 27.

Government number 31 is the third largest government in the sample. Similar to case number 1, government number 31 is also a strong mayoral city with low community wealth and residentialness. Unlike case number 1, government number 31 did not experience much population change during the 2000-17 period. However, similar to both governments number 1 and 27 (and all the other large governments in the sample), this government also have a very

comprehensive and professional approach to capital budgeting mostly thanks to its fiscal and administrative capacities.

Government number 31 is a built-out community with little to no land available for further development, which means the majority of their capital investment focuses on maintenance of existing infrastructure. Additionally, there is very little land underdeveloped within this jurisdiction, meaning that the government does not perform many replacements of existing (or building new) infrastructure. As the interviewee noted, they are “*landlocked enough, that don’t have new infrastructure*”.

This is a very interesting case mainly because of how capital budgeting and planning is undertaken in this government. Unlike other large governments in the sample where the finance director, engineers, or a team of appointed officials lead the capital budgeting programs, such endeavors in government number 31 is mainly and mostly led by the mayor. In fact, the mayor chairs the capital budgeting and planning team. Since elected to office a few years ago, the mayor has transformed the capital budgeting and planning significantly. The mayor has separated the capital and operating budget planning because he believes that capital planning should be addressed on its own merit and receive the spotlight it deserves and should not be overshadowed by the operational spending plans.

Although the capital planning is led by a strong mayor, the process is a bottom-up procedure where engineering, water, and public works departments assess their needs and the capital plan is guided by yearly budget requests from these departments. The government produces a very comprehensive CIP that includes both major and minor maintenance items, as well as a PIP that lays out a long-term plan for maintenance.

The government takes the inspection plan of its capital assets to the next level. They hire a firm to measure the quality of their city roads with a SONAR wave technology¹². This process is extremely expensive, but the interviewee stated that it is worth it because the process is so comprehensive that allows them to direct resources to infrastructure areas with highest level of urgency and need. For example, using SONAR wave technology, the government learned that the roads in the older sections of the city, surprisingly, are in better condition than the roads in the newer sections. This is because in the old days they used to make the roads with cement, but the newer roads are made with “cheaper black top” material. Therefore, the SONAR wave technology helped them realize that the “old roads” are in very good shape and direct maintenance funds to the sections of the city with newer roads.

Regarding the public input in the capital planning process, this government also behaves similar to government number 27. The interviewee noted that their projects need to be justified by the recommendation of city engineers and not just what general public demands. “*They may want a road, but it needs to be justified by city engineers*” said the interviewee, regarding the public input in capital budgeting process.

Overall, looking at these three cases, one can see how larger operating sizes give these governments fiscal and administrative capacity to undertake their capital planning and budgeting in a comprehensive and professional manner. Although I have taken a close look at only the largest three sample governments here, a thorough review of other large government revealed the same pattern: large operating size provides governments with the fiscal, financial, and

¹ National Oceanic and Atmospheric Administration (NOAA) explains Sound Navigation and Ranging (SONAR) as an exploration method by which sound waves are emitted toward surfaces where light and radar have difficulties to reach.

² Oceanservice.noaa.gov. n.d. What Is Sonar?. [online] Available at: <<https://oceanservice.noaa.gov/facts/sonar.html#:~:text=Sonar%20uses%20sound%20waves%20to%20'see'%20in%20the%20water.&text=NOAA%20scientists%20primarily%20use%20sonar,of%20sonar%E2%80%94active%20and%20passive.>> [Accessed 25 November 2020].

administrative capacity that translates into a more sound and comprehensive approach to capital budgeting informed by industry standards.

2. Attributes of Cases with Unprofessional Approach to Capital Budgeting:

This second subsection of section A will now use a mvQCA method to investigate the characteristics of sample governments with *unprofessional* approach to capital budgeting. Using the multi-value truth table in table LIV, a mvQCA minimization procedure was performed in Tosmana software version 1.61 to examine the factors that lead to *unprofessional* and *shortsighted* approach to capital planning and budgeting among the sample governments, and the following parsimonious solution was produced:

Result(s)	Legend
<p>$G_2 + (G_{4,5} * O_{1,2}) \rightarrow \text{Outcome (0)}$</p> <p>Notes:</p> <ul style="list-style-type: none"> (+) means <i>logical OR</i> (*) means <i>logical AND</i> $G_{4,5}$ means G_4 or G_5 $O_{1,2}$ means O_1 or O_2 	<p>G = Form of Government</p> <ol style="list-style-type: none"> 1) Municipal manager and council elected at-large 2) Municipal administrator and council elected at-large 3) Municipal manager and council elected by ward 4) Municipal administrator and council elected by ward 5) Strong mayor and council elected by ward <p>C = Population Change 2000-17</p> <ol style="list-style-type: none"> 1) $X < -7\%$ 2) $-7\% < X < 7\%$ 3) $7\% < X < 30\%$ 4) $30\% < X$ <p>M = Median Household Income 2017</p> <ol style="list-style-type: none"> 1) $X < \\$61,000$ 2) $\\$61,000 < X < \\$90,000$ 3) $\\$90,000 < X$ <p>P = Level of Residentialness 2016</p> <ol style="list-style-type: none"> 1) $X < 70\%$ 2) $70\% < X < 85\%$ 3) $85\% < X$ <p>O = Operating spending size 2017</p> <ol style="list-style-type: none"> 1) $X < \\$10$ million 2) $\\$10$ million $< X < \\$25$ million 3) $\\$25$ million $< X < \\$75$ million 4) $\\$75$ million $< X$ <p>Outcome (0) = <u>Unprof.</u> Approach to Cap Budgeting</p>

This parsimonious solution indicates that two prime implicants represent sufficient conditions for the occurrence of the outcome of interest (i.e. *unprofessional* approach to capital budgeting) among the sample governments: 1) government has an administrator/at-large form; *OR* 2) government is administrator/ward *and* very small, *or* strong mayor/ward *and* very small, *or* administrator/ward *and* small, *or* strong mayor/ward *and* small.

- a. First prime implicant: administrator/at-large sample governments have an unprofessional approach to capital budgeting.*

The first prime implicant is G_2 (municipal administrator and council elected at large) that indicates four cases: number 2, 7, 17, and 24. Based on the truth table in table LIV, these four governments have different levels of community wealth and residentialness and experienced various degrees of population growth during the 2000-17 period.

At first glance, this finding made little sense to me. After all, based on theories and frameworks discussed in chapter 2, the expectation was that sample government with G_2 form of government – that have an appointed CAO (i.e. administrator, in this case) and an at-large form of council – approach capital budgeting and planning in a professional and comprehensive manner. However, this is not what the mvQCA solution is presenting. In fact, the results show that, contrary to the expectations, having this form of government is associated with an *unprofessional* approach to capital budgeting and planning among the sample governments.

Then, looking more closely and carefully at the data presented in the truth table in table LIV, one very specific theme became apparent. All four governments that are represented by this prime implicant have some of the smallest 2017 operating sizes among the sample governments. As was discussed in section A, subsection 1 (part *b*), size of the government appears to be a very crucial factor affecting municipal approach to capital budgeting, at least among the sample governments. Therefore, it could very well be the case that these four governments have unprofessional approach to capital budgeting mainly due to their small operating sizes and limited fiscal and administrative capacities and not due to their form of government. To investigate this issue, following I have taken a closer look at governments number 17 and number 7, two of the smallest governments in the sample.

Government number 17 is the second smallest among the sample governments. It is a low residential and low wealth community that lost about 5% of its residents during the 2000-17 period. This is a mostly undeveloped community with only some developed lands within its jurisdiction. Even worse, most lands in this community are underdeveloped and given the weak fiscal position of the government, replacement of existing infrastructures and/or building new infrastructures do not seem to be viable options for the government, at least at the moment.

The interviewee observed that given the small size of their government, most capital and operating budgeting and planning are done together, and due to “not-so-great” fiscal position of the government, capital projects are discussed only when (and if) there is extra fund available to cover them. The government does not have a dedicated capital planning team and most planning and budgeting for capital is done on an ad-hoc basis.

The government is also fiscally restrained and suffered severely during the Great Recession, making capital spending and budgeting even more limited in this government. As the interviewee put it, *“we are a small community and we really suffered through the great recession and the budget just weren’t there, you know [...] you can budget all you want, you know, but when you have zero dollars in the capital budget it doesn’t matter, you know”*.

The government does not have a comprehensive capital plan such as a CIP or a PIP, either. The overall capital budgeting, in the sense of the word, seems to be absent in this government. Lack of a long-term vision for capital planning and budgeting has made this government reactive in the face of upcoming capital needs. The interviewee agrees with this notion: *“because we don’t have a CIP, we’re reactive in our budgeting, so unfortunately that’s the way it goes”*.

Additionally, the government does not seem to make capital decisions based on industry standards such as the GFOA best practices. In fact, the interviewee reflected on this by saying that s/he is the only one in the government that actually knows what GFOA stands for. Seemingly, government number 17 does not have any capacity for professional and comprehensive capital budgeting. The government does not seem to have a dedicated capital fund, either; and often they finance their capital projects out of their fund balance. The interviewee mentioned that *“you know, honestly the most of our capital projects come out of the fund balance on any given budget year”*.

Data on government number 7 paints a similar picture for capital budgeting. Number 7 is a relatively residential and a moderately wealthy community that experienced fairly high level of population growth during the 2000-17 period. Similar to number 17, government number 7 is also a very small administrator/at-large community. The government seems to have suffered during the Great Recession similar to other small Illinois communities due to its limited fiscal flexibility. The government does not have a capital planning team and the whole capital budgeting process seems to be a one-person-job undertaken by the mayor. Apparently, the government is in a troubling fiscal situation and (based on the information provided by the interviewee) fund sweeping has occurred in the past more than a few times.

Similar to government number 17, government number 7 is also an undeveloped community and as the interviewee noted, out of a total of 10 square miles of lands, only a mere 2 square miles have been developed in this jurisdiction. Additionally, some of these developed areas are, indeed, underdeveloped. Unfortunately, the government’s very limited fiscal and administrative capacity has made replacement of existing infrastructure and/or building new infrastructure an almost impossible task for them.

The government does not have any inspection plan for its capital assets and their unofficial CIP only covers one-year worth of details on capital projects. When inquired about why only one year is covered by the capital plan, the interviewee responded “*we are not confident [in] our revenue to go on much farther than [one year]. And that’s because the state of Illinois is so jacked up with the way they do things, you know, every year the state legislature talks about taking away our income tax money and taking away this and taking away that, so, it’s really dangerous to get too far out because you may borrow and expect to have money to pay the borrow back and then state does a weird thing and now you’re stuck! So, I don’t put us in those kinds of positions*”.

If anything, I appreciate the level of cautiousness the interviewee shows in the response above. It is wise not to borrow when the government is not certain it can repay the loan. However, this quote clearly shows that this government is struggling to meet its capital needs due to its limited fiscal and administrative capacity and not because of its form of government. This is a trend that I observed in all four governments represented by this prime implicant. It appears that these governments all have an ad-hoc and unprofessional approach to capital budgeting more likely due to their small operating sizes and fiscal and administrative capacities and less likely due to their administrative form of government (administrator/at-large in this case).

The previous subsection discussed the impact of government operating size on approach to capital budgeting and we observed that (as the first mvQCA solution on page 8 also revealed) larger sized governments seem to have a professional approach to capital budgeting mainly due to their sheer administrative and fiscal capacities. The findings of this subsection seem to only support this claim. Based on my investigation into the four administrator/at-large governments in

the sample, these governments seem to resort to unprofessional and ad-hoc approach to capital budgeting mainly due to their limited fiscal and administrative capacities. Interestingly, the next subsection shows similar pattern of capital budgeting behaviors among smaller sample governments.

b. Second prime implicant: less professional forms of government that are small have an unprofessional approach to capital budgeting.

The second prime implicant in the parsimonious solution above is $G_{4,5} * O_{1,2}$ that represents all the governments in the sample that have either one of the following four conditions: 1) administrator/ward government with 2017 operating size below \$10 million; *or* 2) administrator/ward government with 2017 operating size between \$10 million and \$25 million; *or* 3) strong mayor/ward government with 2017 operating size below \$10 million; *or* 4) strong mayor/ward government with 2017 operating size between \$10 million and \$25 million.

The presence of this prime implicant in the parsimonious solution means that the mvQCA methodology has found sample governments with any of these four characteristics to have an unprofessional approach to capital budgeting and planning. There are six governments in the sample that are represented by this prime implicant: governments number 8, 18, 22, 23, 26, and 29. 100 percent of the governments with an unprofessional approach to capital budgeting have one prime implicant or the other. Based on the truth table in Table LIV, these governments are all relatively small with various degrees of community wealth and residentialness that also experienced different levels of population growth during the 2000-17 period. Reviewing these six governments, I found patterns of unprofessional capital budgeting due to limited operating size similar to the findings of part *a* in this subsection.

Interestingly, all six cases represented by this second prime implicant have ward system councils which makes them fairly political rather than professional. Overall, it appears that limited administrative and fiscal capacities of these governments, together with their political system of council, dictate their approach to capital budgeting and planning. Following, I have taken a closer look at a few of these six governments to see how governments with different levels of community wealth, residentialness, forms of government, and growth rates all fail to have a formal and professional approach to capital budgeting and planning.

Government number 18 is an administrator/ward city and is the smallest government in the sample. This is a mostly developed community with little underdeveloped land and its main focus of capital spending is on maintenance of existing infrastructure. Unfortunately, it seems that the government does not have any capacity for a separate capital budgeting and planning and most of capital decisions seem to be reactionary and an “after thought” relative to operational spending decisions. Moreover, even their insufficient capital plan often gets pushed back due to lack of funding available for the projects.

Due to its very small operating size, the government is also not prepared for economic and natural catastrophes. Although they regularly deal with flooding, there is no “rainy-day” fund set aside for such unfortunate occasions. The government was hit hard during the last recession and there is no reason to believe it would fare the next economic downturn any better.

The government also does not seem to have any long-term plans for its capital needs as there are no CIP and/or PIP documents produced by the government. The capital decisions are done on a case-by-case and ad-hoc basis and mainly by the council with the help of the mayor while the administrator seems to have a very minimal role in the whole process and is only responsible for leading the capital implementation efforts.

Government number 22 is similar to number 18 regarding its overall approach to capital budgeting. This is a mayoral city run by a full-time mayor and a ward system of council. This is a built-out government with some underdeveloped lands in the jurisdiction. Very similar to government number 18, this government also does not appear to have any form of long-term capital planning and budgeting program, mainly because the government does not have any CIP and/or PIP that lays out its capital and maintenance plans for the future.

The capital budgeting and planning seems to be a one-person-job in this government as the mayor is the sole actor in capital budgeting while the finance director only acts as a form of “liaison” between the mayor and the departments responsible for infrastructure spending. The interviewee also noted that the amount of resource that they have at their disposal often dictates what capital and infrastructure projects they can take on, which indicates their reactionary approach to capital budgeting. Overall, the capital and infrastructure decisions in this government seems to be guided by the desire of elected officials and severely limited by the lack of administrative and fiscal capacities.

Reviewing data on the other governments represented by this prime implicant shows very similar patterns. In short, it appears that among the sample government, those that are small and have ward system councils tend to have an unprofessional and ad-hoc approach to capital budgeting. Interestingly, and based on the results of the first QCA analysis in this section, governments with a manager as CAO (even those with a ward form of council) were found to have a professional approach to capital budgeting. Juxtaposing these findings together, it appears that having a professional manager as CAO gives sample governments (even those with a ward form of council that tends to act more politically) an overall professional approach to capital budgeting and planning.

Taken all together, it seems that both mvQCA results in this section provide a somewhat accurate picture of which governments in the sample approach their capital budgeting in a professional way and which ones follow a more unprofessional approach. Looking at both parsimonious solutions together, one can argue that within the sample governments, those with a manager as CAO or those with large operating sizes tend to have a professional approach to capital budgeting.

On the flip side, the second mvQCA analysis reveals that within the sample governments, those with small operating sizes and where the elected officials heavily influence the budgeting and planning process (as the case studies indicated) tend to have an unprofessional and shortsighted approach to capital budgeting. Now that we learned what factors affect capital budgeting approach among the sample governments, the next section will investigate whether sample governments' approach to capital budgeting impacts their other aspects such as the level of capital spending.

B. The Impact of Approach to Capital Budgeting on Other Aspects of Municipal Governance

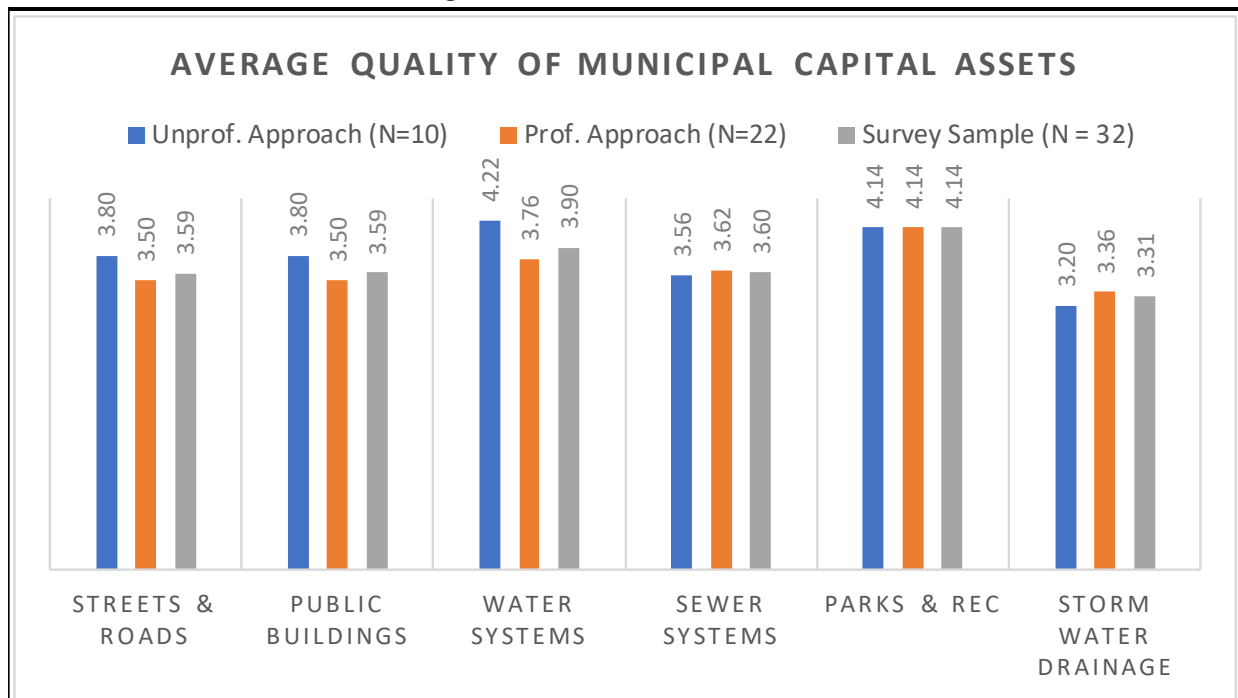
The previous section investigated the causal relationship between various municipal government attributes and approach to capital budgeting and planning. The current section will now investigate whether there is a meaningful causal relationship between different approaches to capital budgeting and planning on one hand, and other aspects of municipal capital budgeting, namely quality of capital assets and capital/construction spending, on the other.

Regarding the quality of capital assets, collected interview data reveals that both groups of governments (i.e. municipalities *with* and *without* a comprehensive/professional approach to capital budgeting and planning) have reported a very similar and comparable quality capital assets. The 32 interviewees were asked to rate the quality of capital assets in their governments

on a scale of 1 to 5 (1 being the lowest and 5 being the highest quality). Table LV below shows that, on average, for six different major types of capital assets, both types of governments reported a very similar level of asset quality.

For each type of capital asset listed in table LV an ANOVA analysis was conducted and for all six categories of municipal capital asset the results of the analyses suggested that the average quality of capital assets between different groups of government (*with* and *without* professional approach to municipal capital budgeting) do not, significantly, differ from each other. Given the very similar quality of capital assets reported by governments in both groups, it appears that (based on the data at hand) the approach to capital budgeting may not have a meaningful impact on quality of capital assets among sample governments.

TABLE LV: AVERAGE QUALITY OF CAPITAL ASSETS



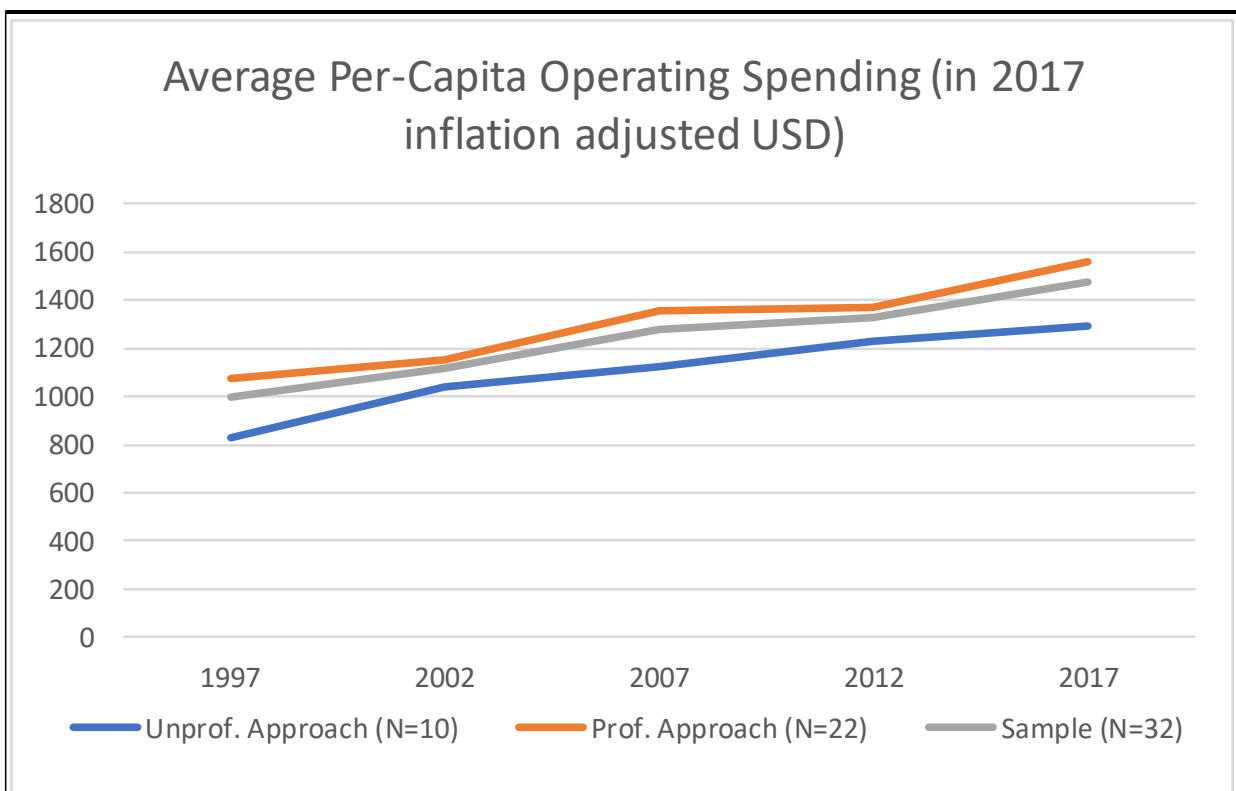
* Data Source: 2019 Interview of 32 Illinois Municipal Governments.

** Quality of assets is rated based on the following scale:

1=F (Fail); 2=D (Needing Major Reconstruction); 3=C (Needing Major Maintenance); 4=B (Needing Maintenance); and 5=A (Well Maintained).

Another aspect of municipal governance that could be affected by overall approach to capital budgeting is capital and construction spending. Using Census of Government data for the 1997-2017 period, tables LVI and LVII compare different spending trends between governments *with* and *without* a comprehensive/professional approach to capital budgeting and planning. As these two tables illustrate, governments that follow a comprehensive and professional approach to capital budgeting and planning have historically spent higher per-capita on both operational and capital spending categories.

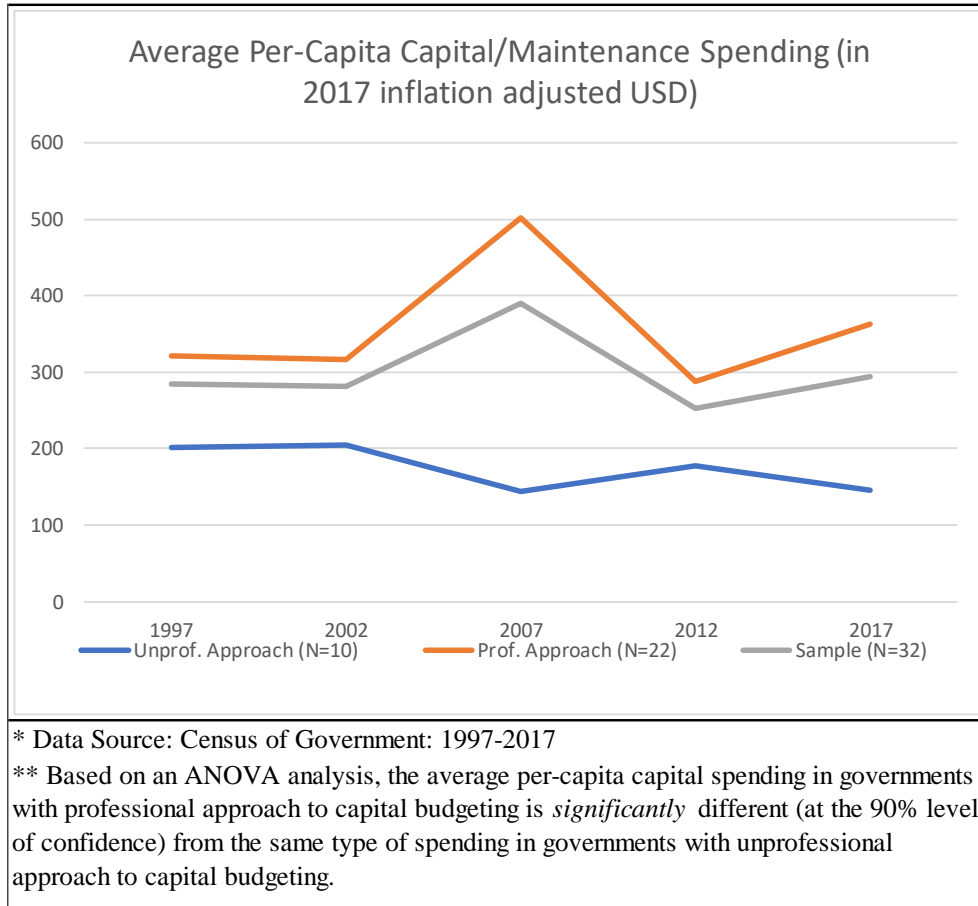
TABLE LVI: AVERAGE PER-CAPITA OPERATIONAL SPENDING IN SAMPLE GOVERNMENTS: 1997 - 2017



* Data Source: Census of Government: 1997-2017

** Based on an ANOVA analysis, the average per-capita operating spending in governments with professional approach to capital budgeting is *significantly* different (at the 90% level of confidence) from the same type of spending in governments with unprofessional approach to capital budgeting.

TABLE LVII: AVERAGE PER-CAPITA CAPITAL & CONSTRUCTION SPENDING IN SAMPLE GOVERNMENTS: 1997 - 2017



Considering that the two groups of governments have spent different amounts per capita during the 1997-2017 period, now we investigate whether there is any meaningful causal relationship between different approaches to capital budgeting/planning on one hand, and capital and maintenance spending, on the other. In order to investigate such causal relationship, and due to continuous nature of capital spending data, a fuzzy-set QCA (fsQCA) method will be used in this section. fsQCA is the most advanced form of QCA that follows the same Boolean logic as the csQCA example explored in chapter 3. The main difference between csQCA and fsQCA is that unlike the former method that only allows for binary representation of data in both the conditions and the outcome (either 0 or 1), the latter method allows causal conditions and outcome take any values between (and including) 0 and 1.

Using a fuzzy calibration technique, fsQCA first translated each raw datapoint to its equivalent amount within the 0-1 range. Then, depending on the fuzzy amount of each datapoint (i.e. an amount within the 0-1 range) fsQCA decides whether to report such datapoint as a 0 (i.e. absence of a condition or outcome) or as a 1 (i.e. presence of a condition or outcome). The resulting truth table is one that very closely resembles a csQCA truth table in that causal conditions and outcome are reported as either 0 or 1.

It is worth noting that fsQCA assigns 0 or 1 values to causal conditions based on their fuzzy values. Any datapoint with fuzzy values less than 0.5 (the point of absolute “fuzziness”) automatically receive a 0 (i.e. absence of a condition) while any datapoint more than 0.5 automatically receive a 1 (i.e. presence of a condition). Datapoints with values of absolute fuzziness (i.e. 0.5) are eliminated from the analysis.

Every fsQCA methodology starts with a “data matrix” table where each condition is presented with its actual “raw” values alongside its “fuzzy” values. Table LVIII below presents the data matrix that will be used by the two fsQCA analyses that will follow in this section: one analysis for higher capital/maintenance spending as the outcome of interest; and the second analysis for lower capital/maintenance spending as the outcome of interest.

Informed by the theories and frameworks discussed in chapter 2, as well as relevant data collected via survey of government officials, a range of conditions were selected that together will help investigate why some governments spend more on capital and maintenance than other governments. As table LVIII illustrates, a total of six conditions are selected for the fsQCA analysis in this section.

TABLE LVIII: DATA MATRIX SHOWING ORIGINAL VARIABLES AND FUZZY-SET MEMBERSHIP SCORES FOR THE FSQCA ANALYSIS

Case #	Causal Conditions								Outcome	
	X	DEBT	FZ (DEBT)	GRANT	ECON	FZ (ECON)	GFC	BFC	Actual	FZ
1	1	2	0.333	1	4	1	0	1	10	0.222
2	0	1	0	1	3	0.667	0	0	1	0.022
3	1	2	0.333	0	2	0.333	0	1	19	0.422
4	1	2	0.333	0	2	0.333	0	0	7	0.156
5	1	2	0.333	0	3	0.667	0	0	3	0.067
6	1	3	0.667	0	2	0.333	1	0	38	0.844
7	0	3	0.667	0	4	1	1	0	0	0
8	0	1	0	0	3	0.667	0	0	31	0.689
9	1	2	0.333	0	3	0.667	0	0	22	0.489
10	1	1	0	0	3	0.667	1	0	23	0.511
11	1	1	0	1	3	0.667	0	1	37	0.822
12	1	3	0.667	0	3	0.667	0	1	6	0.133
13	1	2	0.333	0	2	0.333	0	0	12	0.267
14	1	2	0.333	0	2	0.333	0	0	12	0.267
15	1	2	0.333	0	1	0	1	0	17	0.378
16	1	2	0.333	1	3	0.667	0	0	16	0.356
17	0	2	0.333	0	3	0.667	0	1	8	0.178
18	0	2	0.333	1	4	1	1	0	9	0.2
19	1	2	0.333	1	4	1	0	0	12	0.267
20	1	3	0.667	0	3	0.667	0	1	5	0.111
21	1	2	0.333	0	2	0.333	0	0	20	0.444
22	0	2	0.333	0	4	1	1	0	45	1
23	0	1	0	0	3	0.667	0	0	12	0.267
24	0	2	0.333	0	4	1	0	0	14	0.311
25	1	2	0.333	0	4	1	0	1	44	0.978
26	0	2	0.333	1	3	0.667	0	0	14	0.311
27	1	2	0.333	0	3	0.667	0	1	15	0.333
28	1	2	0.333	0	2	0.333	1	0	19	0.422
29	0	2	0.333	1	2	0.333	0	0	14	0.311
30	1	0	0	0	3	0.667	0	0	17	0.378
31	1	4	1	0	3	0.667	0	1	9	0.2
32	1	4	1	1	2	0.333	0	0	30	0.667

* Following is a list of conditions in the table and their definitions:

- **X:** Approach to capital budgeting; has 2 binary values: 1 = professional; 0 = unprofessional.
- **DEBT:** Gov'ts willingness to borrow for capital financing; has 4 ordinal values from 1 to 4 (with 1 being the lowest and 4 being the highest level).
- **GRANT:** Importance of grants in capital spending decisions; has 2 binary values: 1 = very important; 0 = not very important.
- **ECON:** Importance of economic development; has 4 ordinal values from 1 to 4 (with 1 being the lowest and 4 being the highest level).
- **GFC:** Whether gov't has very GOOD short-term fiscal condition; has 2 binary values: 1 = yes; 0 = no.
- **BFC:** Whether gov't has very BAD short-term fiscal condition; has 2 binary values: 1 = yes; 0 = no.
- **Outcome:** 2017-2019 Average Capital/Maintenance Spending (as a percentage of Operational Spending) is the Outcome variable of the fsQCA analysis and includes continuous values ranging from 0% to 45%.

The main condition among the six conditions in table LVIII is condition X that indicates whether sample governments have a *professional* (value of 1) or an *unprofessional* (value of 0) approach to capital budgeting. This condition is the main condition because this section is first, and foremost, interested in investigating the impacts that approach to capital budgeting has on the level of capital and maintenance spending among the sample governments.

Causal conditions DEBT and GRANT measure sample governments' willingness to finance capital spending through issuing debt or intergovernmental aids, respectively. Data for both conditions are collected from questions D1 and D5 of the survey questionnaire. Question D1 of the survey questionnaire enquires about sample governments' reliance upon borrowing as a method of financing capital budgets. As the footnotes to table LVIII show, for causal condition DEBT, sample governments' willingness to finance capital through debt is categorized into a four ordinal groups of *very low*, *low*, *high*, and *very high*.

Question D5 of the survey questionnaire investigates extent to which different factors (including availability of funding from grants) can affect spending on capital projects. For the importance of intergovernmental aids in capital spending decisions (i.e. causal condition GRANT), data for the sample is categorized into two binary values of *very important* and *not very important*.

Causal condition ECON measures sample governments' approach to economic development and data for this causal condition is collected from question F3 of the survey questionnaire. Data for this condition is organized – based on sample governments' responses to the question *how important economic development is relative to other functions of the government* – into four ordinal values of *extremely important*, *important*, *somewhat important*, and *not very important*.

Finally, causal conditions BFC and GFC both are binary variables that measure short-term fiscal condition of sample governments. BFC stands for *bad fiscal condition* and is equal to 1 if a sample government has very low fund balance reserves as a percentage of operational spending (average of 2017, 2018, and 2019) and 0 otherwise. GFC, on the other hand, stands for *good fiscal condition* and equals 1 if a sample government has very high fund balance reserves as a percentage of operational spending (average of 2017, 2018, and 2019) and 0 otherwise. Fund balance reserves are often an important source of capital financing in governments that rely on pay-as-you-go methods.

The reason for using two binary variables to measure short-term fiscal condition (rather than a single ordinal variable similar to other causal conditions in table LVIII) is because unlike variables DEBT, GRANT, and ECON that were nominal or ordinal in their original form, fiscal condition was calculated using continuous financial data with values ranging from 16% to 213%. So, using just one continuous variable would have transformed this variable into one binary causal condition in the fsQCA truth table and would not allow the measurement of the extremes of this variable in the sample governments.

TABLE LIX: SHORT-TERM FISCAL CONDITION OF SAMPLE GOVERNMENTS

Case #	Average* Short-term Fiscal Condition (% of operational spending)	GFC**	BFC***
3	16	0	1
11	22	0	1
25	24	0	1
17	26	0	1
27	26	0	1
31	26	0	1
20	27	0	1
12	28	0	1
1	32	0	1
14	42	0	0
5	49	0	0
29	52	0	0
13	55	0	0
19	55	0	0
32	57	0	0
16	58	0	0
9	60	0	0
23	60	0	0
8	73	0	0
2	74	0	0
24	74	0	0
4	78	0	0
21	80	0	0
30	81	0	0
26	82	0	0
28	98	1	0
6	102	1	0
10	107	1	0
15	116	1	0
22	124	1	0
7	134	1	0
18	213	1	0

* Average of three year (2017, 2018, and 2019)

** **GFC**: Whether gov't has very GOOD short-term fiscal condition (more than 83%);
has 2 binary values: 1 = yes; 0 = no.

*** **BFC**: Whether gov't has very BAD short-term fiscal condition (less than 42%);
has 2 binary values: 1 = yes; 0 = no.

Rather than using one continuous variable (which would eventually be calibrated into a binary causal condition by the fsQCA truth table), as table LIX illustrates, using two natural breaks in the data, I made two binary variables. First, I made the BFC and assigned 1 value for all governments that have less than 42% fund balance reserves as a percentage of operating spending, and 0 values otherwise. Using 42% as a break point for variable BFC also makes sense conceptually because industry standards suggest that for a municipal government to have healthy fiscal condition (in the short term), it should hold fund balance reserves equal to *at least* one-fourth of its total operational spending ("Best Practices/Advisories | GFOA, n.d.).

Looking at the distribution of values in table LIX, we can see that there is another natural breakpoint in the data at the 83% value. Therefore, I made a second binary variable (i.e. GFC)

and assigned values of 1 to all governments that have more than 83% fund balance reserves as a percentage of operating spending, and 0 values otherwise. Using these two binary variables, this research study will be able to produce a three-tier values for short-term fiscal condition of sample governments: very bad fiscal condition (BFC=1); medium fiscal condition (both BFC=0 and GFC=0); and finally very good fiscal condition (GFC=1).

Similar to the mvQCA analysis that was performed earlier, fsQCA analysis in this section will also be performed in two rounds. First, a minimization analysis will be done for the higher capital/maintenance spending as the outcome of interest. Then, an identical analysis will be performed but this time with the lower spending on capital and maintenance as the outcome of interest. Performing these two fsQCA analysis will help investigate factors that lead to higher as well as factors that lead to lower capital/maintenance spending among the sample governments.

In order to produce the most parsimonious solutions, both rounds of Boolean minimization will include logical remainders. As was discussed in great detail in chapter 3, logical reminders in a QCA analysis are the configurations of causal conditions that are logically possible but do not represent any actual case among the sample. By including logical reminders, the QCA analysis ensures that all possibilities of combinations of causal conditions are considered and the final result of the analysis is the most parsimonious solution that represents all cases with the outcome of interest.

1. Conditions Leading to *Higher* Municipal Capital/Maintenance Spending

Using the fsQCA functionality in the Tosmana software version 1.61, a minimization procedure was performed with *higher* per-capita spending on capital and construction as the outcome of interest that produced the following truth table in Table LX and parsimonious solution.

TABLE LX: TRUTH TABLE FOR FSQCA ANALYSIS: HIGHER CAPITAL / MAINTENANCE SPENDING AS OUTCOME OF INTEREST

Best Instances	X	DEBT	GRANT	ECON	GFC	BFC	Outcome (1)	# of cases with >0.5 membership
8, 23, 24	0	0	0	1	0	0	0	3
17	0	0	0	1	0	1	0	1
22	0	0	0	1	1	0	0	1
29	0	0	1	0	0	0	0	1
2, 26	0	0	1	1	0	0	0	2
18	0	0	1	1	1	0	0	1
7	0	1	0	1	1	0	0	1
4, 13, 14, 21	1	0	0	0	0	0	0	4
3	1	0	0	0	0	1	0	1
15, 28	1	0	0	0	1	0	1	2
5, 9, 30	1	0	0	1	0	0	0	3
25, 27	1	0	0	1	0	1	0	2
10	1	0	0	1	1	0	1	1
16, 19	1	0	1	1	0	0	0	2
1, 11	1	0	1	1	0	1	0	2
6	1	1	0	0	1	0	1	1
12, 20, 31	1	1	0	1	0	1	0	3
32	1	1	1	0	0	0	1	1

*** List of conditions and outcome variable:**

- **X:** Approach to capital budgeting
- **DEBT:** Gov'ts willingness to borrow for capital financing
- **GRANT:** Importance of grants in capital spending decisions
- **ECON:** Importance of economic development
- **GFC:** Whether gov't has very GOOD short-term fiscal condition
- **BFC:** Whether gov't has very BAD short-term fiscal condition
- **Outcome (1):** Higher 2017-2019 Average Capital/Maintenance Spending (as a percentage of Operational Spending)

Table LX presents a fsQCA truth table for the *higher* capital/maintenance spending as the outcome of interest among the sample governments. A wide range of causal conditions that are expected to impact municipal capital and maintenance spending among the sample governments are included in the truth table and the QCA analysis. These variables include DEBT, GRANT, ECON, GFC, and BFC. However, and as discussed earlier in the section, municipal government approach to capital budgeting (X) is the main focus of the current analysis since its impact on municipal capital and infrastructure spending directly addresses the second research question discussed in chapter 1. Using fsQCA function of the Tosmana software, the following parsimonious solution was produced.

Result(s)	Legend
<p>X*GFC + X*DEBT*bfc → Outcome (1)</p> <p>Notes:</p> <ul style="list-style-type: none"> • (*) means <i>logical AND</i> • (+) means <i>logical OR</i> 	<p>X: Approach to municipal capital budgeting (X= prof.; x= unprof.)</p> <p>DEBT: Gov'ts willingness to borrow for capital financing (DEBT= willing; debt= unwilling)</p> <p>GRANT: Importance of grants in capital spending decisions (GRANT= very important; grant= not very important)</p> <p>ECON: Importance of economic development (ECON= Very important; econ= not very important)</p> <p>GFC: Whether gov't has very GOOD short-term fiscal condition (GFC= yes; gfc= no)</p> <p>BFC: Whether gov't has very BAD short-term fiscal condition (BFC= yes; bfc= no)</p> <p>Outcome (1) = <i>Higher</i> 2017-2019 Average Capital/Maintenance Spending (as a percentage of Operational Spending)</p>

FsQCA follows the same Boolean nomenclature as csQCA does. This means, an uppercase letter indicates presence, while a lowercase letter indicates absence of a condition. Also, a plus sign (+) means logical *or* while a multiplication sign (*) means logical *and*. As the result indicate, there are two combinations of conditions (i.e. prime implicant) that represent sufficient conditions for the presence of the outcome of interest (i.e. *higher* 2017-2019 average capital/maintenance spending as a percentage of operational spending, in this case) among the sample governments: sample governments have professional approach to capital budgeting *AND* a very good short-term fiscal condition (i.e. their fund balance reserves is more than 83 percent

of total operating spending) (prime implicant $X * GFC$) ; *OR* sample governments have professional approach to capital budgeting *AND* prefer debt for capital financing *AND* their short-term fiscal condition is at least medium (i.e. their fund balance reserves is more than 42 percent of total operating spending) (prime implicant $X * DEBT * bfc$).

In total, and as the truth table in table LX indicates, five sample governments are represented by this parsimonious solution (there are a total of five governments with outcome equal to one). Governments number 6,10,15, and 28 are represented by the first prime implicant ($X * GFC$), while case number 32 is represented by the second prime implicant ($X * DEBT * bfc$). Overall, this parsimonious solution indicates that professional governments with either very good fiscal condition that finance capital projects via pay-go, or not very bad fiscal condition that utilize debt for financing capital tend to have higher capital and maintenance spending levels.

Looking at the parsimonious solution above, X (*professional* approach to capital budgeting) is a necessary condition (because it is part of both prime implicants and is *necessary* for the outcome of interest to occur), while neither causal condition (X , GFC , $DEBT$, and bfc) is a sufficient condition alone because no condition alone can produce the result of interest.

Looking more carefully at Table LVIII reveals an interesting theme in line with this result. Even without looking at the parsimonious solution, one can see that governments that have a professional approach to capital budgeting tend to also have a higher capital/maintenance spending (as a percentage of operational spending). Interviews with these public officials supported this finding. In numerous cases, public officials whose governments have a professional approach to capital budgeting emphasized the importance of adequate capital spending if the government wants to avoid the long-term costs and catastrophes associated with delayed maintenance and replacement of failing capital assets.

Cases number 15 and 28 are both identified by the first prime implicant in the parsimonious solution above (X^*GFC). Both governments have a very professional approach to capital budgeting and planning and both enjoy a very healthy fund reserve balance. Relative to the sample, both governments are also considerably large indicating that they have enough fiscal and administrative capacities to conduct their capital budgeting in a professional manner.

Government number 15 follows a very comprehensive plan for capital and maintenance spending. The interviewee noted that they conduct a pavement management study every 3 years and also inspect a few bridges annually with the goal of inspecting all bridges within their jurisdiction over a 5-year period. Then, using data collected via investigating capital assets, they make reconstruction and maintenance plans. Due to their very healthy fund balance reserves, this government mostly finances capital projects from own-source revenues and uses General Obligation (GO) bonds less often.

Government number 28 follows a very similar approach to capital spending decisions. The interviewee noted that their government has built up fund balance reserves to a point where they really don't need to rely on borrowing for capital spending unless they need a large sum of money, in which case they consider issuing bonds. Overall, and looking at both cases number 15 and 28, it is apparent that these governments spend a lot on their capital and maintenances because they believe that not attending to their capital needs will only increase costs down the road – a point of view that is exactly in line with their approach to capital budgeting and their overall fiscal condition and level of reserves.

Municipality number 6 is an interesting case. As discussed earlier in the chapter, this is a very wealthy and highly residential government that although is one of the smallest governments in the sample, it has a very strong managerial team that follows a professional approach to

capital budgeting. Thanks to its healthy fiscal reserves, the government has a very strong fiscal position. The interviewee specifically highlighted the importance of spending on capital and maintenance and noted that the management team follows through with annual plans and requires each department to provide a 10-year departmental plans that lists the capital needs of each department. Using these plans, the management team makes sure that these capital needs are met in a timely manner and on annual basis.

Unlike governments number 15 and 28, and despite having some of the highest levels of fund balance reserves (as a percentage of operational spending) among the sample governments, government number 6 usually relies upon borrowing for large and expensive redevelopment and reconstruction projects while fund balance reserves are not used unless for smaller and less expensive capital projects. This way, the interviewee noted, the government will always remain fiscally solvent and can better tackle ups and downs of economy by using its healthy fund balance reserves.

Case number 32 is represented by the second prime implicant in the parsimonious solution above (i.e. X^*DEBT^*bfc). This is a government with a professional approach to capital budgeting that has one of the highest capital and maintenance spending (as a percentage of operational spending) in the sample. Similar to many other governments with professional approach to capital budgeting, capital and maintenance spending appears to be considered very important in government number 32, as well. This government is very detailed and specific about its capital and infrastructure needs. The government identifies specific and detailed capital needs related to roadways and water systems and, as the interviewee put it, these specific needs guide their capital spending decisions. They always try to keep their facilities (especially roads and water systems) in good shape and believe that by regularly investing in their infrastructure

maintenance, they will avoid paying a lump sum of money for replacement when these systems eventually fail if not maintained on regular basis.

The interviewee from government number 32 mentioned (in numerous occasions) that currently their government is very much focusing on replacement of existing infrastructure (mostly their roads and water systems) while building new infrastructure “[...] *takes the back seat for the moment*”. Since replacement of these capital infrastructures is very expensive, the government heavily relies upon debt financing for capital projects while reliance on fund balance reserves is very limited. Although the government has a healthy level of fund reserves, such reserve is kept and treated as a type of “rainy day fund” and the interviewee noted that they prefer not to use their reserves for capital and maintenance projects as long as they can fund such projects through borrowing from the market.

Looking at other governments with professional approach to capital budgeting that are identified by the fsQCA result, very similar patterns can be observed. Overall, and as suggested by the parsimonious solution, professional approach to capital budgeting does, in fact, translate into higher capital and maintenance spending (as a percentage of operational spending) among sample governments. Additionally, this effect is amplified among cases that rely on debt financing of capital as well as those that enjoy a healthy levels of fund balance reserves and a strong fiscal position.

2. Conditions Leading to *Lower* Municipal Capital/Maintenance Spending

Finally, a similar fuzzy set analysis is undertaken but this time for the *lower* capital/construction spending (as a percentage of operational spending) as the outcome of interest. Table LXI illustrates the fsQCA truth table for the analysis with *lower* capital/construction spending among the sample municipal governments as the outcome of

interest. Similar to previous fsQCA analysis, a wide range of causal conditions such as DEBT, GRANT, ECON, GFC, and BFC are included in the truth table and analysis. The main causal factor, similar to the analysis performed in previous subsection, will be the sample municipalities' approach to capital budgeting and planning (X) because it directly addresses the second research question in this study.

TABLE LXI: TRUTH TABLE FOR FSQCA ANALYSIS: LOWER CAPITAL / MAINTENANCE SPENDING AS OUTCOME OF INTEREST

Best Instances	X	DEBT	GRANT	ECON	GFC	BFC	Outcome (0)	# of cases with >0.5 membership
8, 23, 24	0	0	0	1	0	0	0	3
17	0	0	0	1	0	1	1	1
22	0	0	0	1	1	0	0	1
29	0	0	1	0	0	0	1	1
2, 26	0	0	1	1	0	0	1	2
18	0	0	1	1	1	0	1	1
7	0	1	0	1	1	0	0	1
4, 13, 14, 21	1	0	0	0	0	0	0	4
3	1	0	0	0	0	1	0	1
15, 28	1	0	0	0	1	0	0	2
5, 9, 30	1	0	0	1	0	0	0	3
25, 27	1	0	0	1	0	1	0	2
10	1	0	0	1	1	0	0	1
16, 19	1	0	1	1	0	0	0	2
1, 11	1	0	1	1	0	1	0	2
6	1	1	0	0	1	0	0	1
12, 20, 31	1	1	0	1	0	1	0	3
32	1	1	1	0	0	0	0	1

*** List of conditions and outcome variable:**

- **X:** Approach to capital budgeting
- **DEBT:** Gov'ts willingness to borrow for capital financing
- **GRANT:** Importance of grants in capital spending decisions
- **ECON:** Importance of economic development
- **GFC:** Whether gov't has very GOOD short-term fiscal condition
- **BFC:** Whether gov't has very BAD short-term fiscal condition
- **Outcome (0):** Lower 2017-2019 Average Capital/Maintenance Spending (as a percentage of Operational Spending)

Result(s)	Legend
<p>$x*GRANT + x*BFC \rightarrow Outcome (0)$</p> <p>Notes:</p> <ul style="list-style-type: none"> • (*) means <i>logical AND</i> • (+) means <i>logical OR</i> 	<p>X: Approach to municipal capital budgeting (X= prof.; x= unprof.)</p> <p>DEBT: Gov'ts willingness to borrow for capital financing (DEBT= willing; debt= unwilling)</p> <p>GRANT: Importance of grants in capital spending decisions (GRANT= very important; grant= not very important)</p> <p>ECON: Importance of economic development (ECON= Very important; econ= not very important)</p> <p>GFC: Whether gov't has very GOOD short-term fiscal condition (GFC= yes; gfc= no)</p> <p>BFC: Whether gov't has very BAD short-term fiscal condition (BFC= yes; bfc= no)</p> <p>Outcome (0) = <u>Lower</u> 2017-2019 Average Capital/Maintenance Spending (as a percentage of Operational Spending)</p>

Similar to previous fsQCA analysis, the current analysis also produced two prime implicants indicating a very parsimonious solution. As the result indicates, there are two combinations of conditions that represent sufficient conditions for the outcome of interest (i.e. *lower capital/maintenance spending*, in this case) among the sample governments: sample governments have unprofessional approach to capital budgeting *AND* grants tend to be very important in their capital financing decisions; OR sample governments have unprofessional approach to capital budgeting *AND* a very bad short-term fiscal condition (i.e. their fund balance reserves are less than 42 percent of total operating spending).

It should be noted that in Boolean nomenclature, lower case denotes the absence of a causal condition. In this case, lowercase *x* means lack of a professional approach to capital budgeting (which is indicated by uppercase *X*). Also, *x* is a necessary condition – since it is included in both prime implicants and is necessary for the outcome of interest to occur – while no single causal condition (*X*, *GRANT*, or *BFC*) is a sufficient condition because no condition singlehandedly produces the outcome of interest.

A total of five sample governments are represented by this parsimonious solution. Cases number 2,18,26, and 29 are represented by the first prime implicant ($x*GRANT$), while government number 17 is represented by the second prime implicant in the parsimonious

solution above (x^* BFC). An overall look at the governments implied by this parsimonious solution, a very similar theme is apparent in all of them. These are relatively small communities with very limited fiscal and administrative capacities. Capital budgeting process is often ad-hoc and capital projects are undertaken based on availability of funds. Additionally, the process is mostly a one-person-job (this is usually the mayor) and capital decisions are heavily influenced by the elected officials such as the mayor and/or the councilmembers.

Interestingly, two of the governments represented by the parsimonious solution for lower capital/maintenance spending (as a percentage of operational spending) are among the administrator/at-large governments discussed in detail in section A, subsection 2 (part *a*) in this chapter. These are governments number 2 and 17. As we discussed in that subsection, these are relatively small communities where the mayor has massive influence on capital spending decisions and barely have any capacity for a formal capital budgeting. As a result, often the capital and maintenance spending are neglected while the government focuses its very limited fiscal and administrative capacities on more immediate operational needs.

Government number 17, a very small community of approximately five-thousand population, barely has any administrative capacity to perform capital budgeting in a professional manner. Additionally, the government has some of the lowest and unhealthiest levels of fund balance reserves in the sample. As was discussed earlier in this chapter, this government does not even have a CIP or a PIP where near- and far-future capital and maintenance needs are listed. The Interviewee mentioned in multiple occasions that their government is very much *reactive* toward capital and maintenance projects and does not really have any capacity to plan these projects in advance. Considering that due to their small size borrowing for capital spending is not really an option for them (due to relatively large costs associated with issuing bonds), and

considering their very weak fiscal position, it is no wonder government number 17 has some of the lowest levels of capital and maintenance spending (as a percentage of operational spending) among the sample governments.

Government number 2 does not fare any better than case number 17. In fact, it approaches capital and maintenance spending decisions in very much the same way as number 17. The government has very limited capacity for conducting any meaningful capital spending and budgeting planning, does not have a good enough bond rating to enable them to issue debt at an acceptable rate for capital financing, and although has a medium level of fund balance reserves, it does not seem that the government has established plans and procedures to use fund balance reserves for capital and maintenance purposes. It is, then, no surprise that similar to case number 17, government number 2 also has one of the lowest levels of capital and maintenance spending in the sample.

Government number 26 is very similar to number 2 in that both governments rely heavily on how much grant is available to them when making capital and maintenance spending decisions. The interviewee from government number 26 mentioned that their government approaches capital projects on a case-by-case basis and – depending on availability of funds – makes decisions on how much and on which project they should spend their limited resources. They noted that due to their limited resources, they often approach capital projects reactively. Although they finance smaller capital projects and maintenances from their own-source revenues, they are heavily reliant upon grants and intergovernmental aids for their larger and more expensive capital projects.

Looking at other governments represented by this parsimonious solution, we can see very similar patterns of unprofessional approach to capital budgeting combined with weak fiscal

condition (that leaves these governments eying other sources of capital financing such as grant), leading to lower attention to capital and maintenance spending among these sample governments. Next, section C will summarize the findings and presents a holistic picture of the results discussed in this chapter.

C. Putting It All Together

This chapter provided a suite of QCA techniques to investigate causal relationships between five attributes of governments and their approach to capital budgeting/planning using a mvQCA analysis, and between governments' approach to capital budgeting/planning (alongside five additional causal conditions of DEBT, GRANT, ECON, GFC, and BFC) and the level of capital/maintenance spending using a fsQCA analysis. First, two rounds of mvQCA analyses were undertaken in the first section. The result of the mvQCA analysis on *professional* approach to capital budgeting as the outcome of interest indicated that sample governments whose capital budgeting endeavors are led by a strong appointed manager *OR* large governments that have abundant fiscal and administrative capacity for capital budgeting and planning, have a professional and comprehensive approach to capital budgeting.

For the second round of mvQCA analysis, the same truth table and analysis was utilized, but this time for *unprofessional* approach to capital budgeting as the outcome of interest. The results indicated that sample governments with administrator/at-large form *OR* governments with small sizes are prone to unprofessional approach to capital budgeting. Although the latter result made sense, the former result was very perplexing. After a closer look at the four sample governments with administrator/at-large form (that are represented by the first prime implicant in the parsimonious solution), it was revealed that all four cases are among the smallest

governments in the sample with little to no fiscal and administrative capacities available for conducting capital budgeting and planning in a professional and comprehensive manner.

Therefore, and in order for the results of both mvQCA analyses in this study to be generalizable (at least modestly) to other Illinois municipalities, what we have learned could be summarized as following: sample governments that are run by an appointed manager *OR* have large operating sizes tend to have a professional and comprehensive approach to capital budgeting, while sample governments that have small operating sizes (be it an administrator/at-large or any other form of government) are more prone to unprofessional and shortsighted approach to capital budgeting.

After investigating the factors that lead to different approaches to capital budgeting, the second section of the chapter investigated the impacts that different approaches to municipal capital budgeting could have on the level of capital and maintenance spending (as a percentage of operational spending) in sample governments. Using a fsQCA technique, we first investigated the factors that could lead to *higher* capital/maintenance spending as the outcome of interest. The result of this first fsQCA exercise indicated that sample governments that have professional approach to capital budgeting *AND* a very good short-term fiscal condition, *OR* sample governments that have professional approach to capital budgeting *AND* prefer debt for capital financing *AND* their short-term fiscal condition is at least medium, tend to have a higher level of capital and maintenance spending.

Using the same technique but this time for *lower* per-capita capital/construction spending as the outcome of interest, the second fsQCA model provided a parsimonious solution indicating that sample governments that have unprofessional approach to capital budgeting *AND* consider grants to be very important in their capital financing decisions, *OR* sample governments that

have unprofessional approach to capital budgeting *AND* a very bad short-term fiscal condition, tend to have lower per-capita capital spending levels.

Looking at the two fsQCA solutions, one can see that the approach to capital budgeting is a necessary condition in both solutions. Therefore, and given the illustrated impact of approach to municipal capital budgeting on the level of capital and maintenance spending, it would not, at all, be unfounded to “moderately” generalize this finding to other Illinois municipalities and argue that similar to professionally-run sample governments, other Illinois governments with a sound and professional approach to capital budgeting are also expected to have higher capital and maintenance spending relative to operational spending.

Also, similar to sample governments with unprofessional capital budgeting and planning, other Illinois governments with a shortsighted and ad-hoc approach to capital budgeting are expected to have lower infrastructure/maintenance spending levels. Next, the final chapter of this research study will discuss the venues for future research and provides some concluding remarks on the findings that were discussed in both chapter four and this chapter.

VI. POLICY IMPLICATIONS AND FUTURE RESEARCH

This final chapter of the dissertation is divided into two sections. First, section A will present the findings of the research study and discuss the policy implications related to approach to municipal capital budgeting that could benefit other municipal governments with similar institutional and socio-economic characteristics. The second and last section of the chapter (Section B) will discuss the limitations of the current research study and provides recommendations for future research.

A. Discussion of Research Findings and Policy Implications

Chapters 4 and 5 provided descriptive and explanatory analyses of the findings in the current research study, respectively. Using data collected from the interviewing thirty-two sample government, among other sources, chapter 4 explored major themes observed among sample governments. As one of the major themes discussed in chapter 4, we learned that although majority of the thirty-two sample governments have a comprehensive and professional approach to municipal capital budgeting, the few that do not have such professional approach (and rather have an unprofessional and ad-hoc approach to municipal capital budgeting) tend to be smaller governments with limited fiscal and administrative capacities.

The results of the qualitative comparative analysis (QCA) section A, subsection 2 of chapter 5 found similar causal relationship between unprofessional approach to municipal capital budgeting and limited fiscal/administrative capacity of sample governments. Utilizing a QCA technique (namely a multi-value QCA) as well as numerous case-study analyses, the results in

section A, subsection 2 of chapter 5 indicated that governments with limited fiscal and administrative capacities tend to have an unprofessional and ad-hoc approach to municipal capital budgeting and planning.

On the other hand, section A, subsection 1 of chapter 5 found that larger governments, that have higher fiscal and administrative capacities, tend to have a professional and forward-looking approach to municipal capital budgeting. Taking all the descriptive observations and explanatory results (discussed in chapters 4 and 5, respectively) together, it appears that for a municipal government to have a professional approach to capital budgeting, it needs to have enough fiscal and administrative capacities to be able to perform tasks related to capital budgeting methodically and professionally.

From interviewing public officials in sample governments, I learned that having fiscal and administrative capacity to govern seems to be the most necessary ingredient for having a professional approach to municipal capital budgeting. As numerous case studies in chapter 5 revealed, interviewees in smaller governments often pointed out that their government approaches capital budgeting and spending decisions in an ad-hoc fashion and that these efforts are often a “one-man” job led by the chief executive (often the mayor).

The smallest municipal governments in the sample are numbers 17 and 18 with 2017 operational spending of \$7.8 million and \$4.8 million, respectively. As discussed in chapter 5, in both cases the capital budgeting attempts are conducted on a case-by-case basis and run by a single public official. These two sample governments are good examples of how governments with limited fiscal and administrative capacities approach capital budgeting and spending in an informal and ad-hoc basis.

Interviewees from larger sample governments, on the other hand, stated in numerous cases that their governments have established procedures and practices for capital budgeting, planning, and decision-making. These governments usually have dedicated capital planning teams that include professional appointees from different departments and led by the manager and or the chief administrative officer.

Given their fiscal and administrative capacity, large sample governments can develop multi-year capital and infrastructure plans and spend on capital maintenance more frequently in order to avoid economic and sanitary repercussions of underperforming or failing capital infrastructure such as water and sewer systems.

Looking closer at the thirty-two sample governments, municipality number 6 is the smallest government (with approximately \$9 million in 2017 operating spending size) that was found to have a professional and forward-looking approach to capital budgeting. From a total of 1299 municipal governments in Illinois, only 265 governments have 2017 operational spending in excess of nine million. In other words, if the findings of this study are to be used as an anchor, then only about 20 percent of all Illinois municipalities are expected to have enough fiscal and administrative capacities to perform capital budgeting and planning professionally.

There are many Illinois municipal governments that similar to cases number 17 and 18 suffer from lack of administrative capacity in order to develop a professional and comprehensive approach to municipal capital budgeting and spending. Out of 1299 Illinois municipalities, 643 government have operating spending below \$1 million while 956 governments have operating spending below \$5 million. As the empirical results of this study also suggests, many of these smaller Illinois governments are expected to approach municipal capital budgeting on an ad-hoc and case-by-case basis.

Another major theme found in the data (as discussed in chapter 4) is the significant impacts of the elected officials in capital budgeting. Chapter 4 observed that these elected officials are very influential in the capital budgeting and decision-making process. When asked about the importance of different public officials in municipal capital budgeting and decision-making process, more than seventy-one percent of interviewed officials considered the mayors to be extremely important while more than fifty-three percent also considered the councilmembers as extremely important in the process.

The results of the multi-value QCA and case-study analyses in section A of chapter 5 painted a very similar picture. Section A, subsection 2 of chapter 5 found that smaller sample governments where the council is elected by district and do not have a manager as CAO tend to have an unprofessional approach, while sample governments where a manager leads the administration and capital budgeting and planning efforts tend to have a professional approach to municipal capital budgeting.

Case studies in section A, subsection 1 of chapter 5 indicate that the political intentions and influences of mayors do, in fact, hinder professional approach to capital budgeting as these officials tend to have a shorter-term view of capital needs of their governments. In contrast, sample governments run by managers tend to have a longer-term view of capital budgeting informed by the actual capital and maintenance needs of government and not by short-term political aspirations.

Chapter 4 also showed that the public participation in capital budgeting process in the sample governments is very low. Interviewees in sample governments of different size, institutional forms, wealth, growth, and level of residentialness noted that as much as they would love to engage the general public in the capital budgeting process, people just do not seem to get

involved. As one of the interviewees put it, “it’s really hard to get people involved and care about [capital budgets and process]. People just don’t care about things [by which] they are directly impacted”.

Many of these sample governments consider capital budgeting a very delicate process carried by experts such as government engineers, finance directors, or public works directors. Although the overall process is informed by the capital and maintenance needs in the community, these decisions need to have technical and financial justifications, as well. As an example, one of the interviewees noted that capital projects need to be justified by the government engineers before being included in the CIP and the capital budget, and that their government (or any other municipality, for that matter) simply does not have the fiscal capacity and financial resources to grant the “capital wishes” of every single resident in the jurisdiction.

Finally, the numerous case studies undertaken in chapter 5 also revealed that capital budgeting in the sample governments more or less reflects the pragmatic and realistic view of capital budgeting championed by the likes of Nunn (1990) and Pagano (1984), among others, as opposed to a more traditional and “orthodoxy” view of public capital budgeting.

As chapter 2 discussed in detail, the “orthodoxy” view of capital budgeting holds that governments and other public entities should follow a set of econometric tools and techniques (e.g. Return on Investment, Net Present Value, etc.) when ranking capital projects, among other activities. Case studies undertaken in chapter 5 showed that the sample governments do not put a lot of emphasis on these econometric tools and techniques when making capital decisions. Rather, interviewees in multiple sample municipalities stated that their government take a holistic approach when making infrastructure and maintenance decisions and that these decisions are made relative to other aspects of government such as operating budget.

From among the thirty-two sample governments, only six governments consider ROI as a major factor when making decisions on capital projects, while NPV is considered as a major factor in the process in only seven governments. Overall, and in line with the findings of the prior studies, majority of governments do not consider these econometric techniques when making capital spending and financing decisions and, rather, resort to a more holistic approach that considers different aspects of these governments such as the operating budget, level of fund reserves, necessity of the projects, among other factors. The next, and last, section of the chapter will discuss the limitations of the current study and proposes directions for future research.

B. Study Limitations and Directions for Future Research

Despite offering valuable and intuitive view of approach to municipal capital budgeting and spending, this study has some limitations and future research is needed to overcome such limitations and ascertain the causal relationship between municipal government characteristics and approach to capital budgeting and spending.

First (and perhaps the largest) limitation of this study is the composition of thirty-two sample governments. As table VII in chapter 3 illustrated, most of the sample governments are located in or near the Chicago metro region. Despite being carefully selected based on institutional and socioeconomic characteristics, proximity of these thirty-two sample governments to the Chicago economic hub could make the results less generalizable to other Illinois municipalities farther away from the Chicago economic center.

These sample governments often have similar characteristics that separates them from other municipal governments in other regions of the state. Most of these governments are larger, more populated, and considerably and relatively wealthier than most other Illinois municipalities. They are more urbanized and older than most other cities in the state. Being older means that

most of these sample governments also have older infrastructure in need of repair and replacement.

All of the different characteristics of sample governments suggest that their capital needs are somewhat different from those of other cities across the state. Therefore, the capital budgeting approach that these sample governments take may not reflect the approach that an average Illinois municipality may take. Thus, the results of this research study should be generalized to other Illinois municipality only cautiously.

Secondly, the fact that this research study utilized a suite of qualitative comparative analysis techniques and case-studies also limits the generalizability power of the research findings. Although case study and QCA analyses are very useful for comprehensive investigation of a limited number of cases, due to the qualitative nature of these methodologies, they are not strong tools for the purpose of generalizability.

The qualitative comparative and case study analyses helped this research study uncover many aspects of municipal capital budgeting, planning, and spending, such as the characteristics of sample governments that have a professional and comprehensive approach to capital budgeting. Perhaps, future research could utilize a quantitative method in order to ascertain the findings of this study and increase the generalizability of its findings.

Finally, in order to keep some of the environmental/external factors constant, this study only looked at municipal governments in one state (i.e. state of Illinois). As chapter 2 discussed in detail, governments in different states are subject to considerably different state-wide and regional rules and regulations (e.g. Tax and Expenditure Limitations) that can affect and shape their approach to capital and infrastructure budgeting, planning, and spending rather significantly.

Although limiting the focus of this analysis to municipal governments within a single state perfectly suited the qualitative purpose of this study, it also means that the impacts of environmental factors, such as regional economy and state TELs, on municipal capital budgeting were not investigated in this study. Perhaps, a future study could use the same QCA and case study techniques and investigate a sample of municipal governments from different states, and in doing so complement the approach this research study has taken to investigate municipal capital budgeting and spending.

CITED LITERATURE

- Afonso, W. B. (2014). Local Government Capital Spending During and After Recessions: A Cause for Concern? *International Journal of Public Administration*, 37(8), 494–505. <https://doi.org/10.1080/01900692.2013.865646>
- American Society of Civil Engineers [ASCE] (2017). 2017 Report Card for America's Infrastructure. Available at <https://www.infrastructurereportcard.org/wp-content/uploads/2016/10/2017-Infrastructure-Report-Card.pdf>
- Aschauer, D. A. (1990). Why is infrastructure important? *Transportation Research Board*, 21–68.
- Bates, L. J., & Santerre, R. E. (2015). The Demand for Municipal Infrastructure Projects: Some Evidence from Connecticut Towns and Cities. *Public Finance Review*, 43(5), 586–605. <https://doi.org/10.1177/1091142114527782>
- Beckett-Camarata, J. (2003). An examination of the relationship between the municipal strategic plan and the capital budget and its effect of financial performance. *Journal of Public Budgeting, Accounting & Financial Management*, 15(1), 23–40. <https://doi.org/10.1016/j.jtos.2014.07.002>
- Bell, M., Brunori, D., Hanson, R., Choi, C., Metcalf, L., & Yuan, B. (2006). Fiscal Research State and Local Infrastructure Financing: A Review of Spending Patterns and Financing Mechanisms (Issue January, p. 32).
- Berg-Schlosser, D. (2012). *Mixed methods in comparative politics: Principles and applications*. Palgrave Macmillan.
- Berg-Schlosser, D., Gisèle De Meur, Benoît Rihoux, and Charles Ragin. 2009. "Qualitative Comparative Analysis (QCA) as an Approach." In *Configurational Comparative Methods. Qualitative Comparative Analysis (QCA) and Related Techniques*, edited by Benoît Rihoux and Charles Ragin, 1–18. Thousand Oaks: SAGE.
- Berne, R., & Schramm, R. (1986). *The Financial Analysis of Governments*. Englewood Cliffs, NJ: Prentice Hall.
- Best Practices/Advisories | Government Finance Officers Association. Retrieved from <http://www.gfoa.org/best-practices>
- Bifulco, R., Bunch, B. S., Duncombe, W., Robbins, M. D., & Simonsen, W. (2012). Debt and Deception: How States Avoid Making Hard Fiscal Decisions. *Public Administration Review*, 72(5), 659–667. <https://doi.org/10.1111/j.1540-6210.2012.02533.x>
- Bland, R. (2013). *A budgeting guide for local government*. 3rd ed. Baltimore, MD: Intl City/County Management Association.

- Bland, R. L., & Nunn, S. (1992). The Impact of Capital Spending on Municipal Operating Budgets. *Public Budgeting & Finance*, 12(2), 32–47. <https://doi.org/10.1111/1540-5850.00936>
- Booms, B. H. (1966). City governmental form and public expenditure levels. *National Tax Journal*, 19(2), 187–199.
- Borge, L., & Hopland, A. O. (2015). Investments and maintenance: Easy targets when governments cut budgets? (February), 1–18.
- Bozeman, L. (1984). The capital budget: History and future directions. *Public Budgeting Finance*, 4(3), 18–30. <https://doi.org/10.1111/1540-5850.00647>
- Bunch, B. S. (1996). Current practices and issues in capital budgeting and reporting. *Public Budgeting and Finance*, 16(2), 7–25. <https://doi.org/10.1111/1540-5850.01066>
- Carr, J. B. (2009). Beyond Ideal Types of Municipal Structure - Adapted Cities in Michigan. *The American Review of Public Administration*, 39(3), 304–321.
- Carr, J. B. (2015). What Have We Learned about the Performance of Council-Manager Government? A Review and Synthesis of the Research. *Public Administration Review*, 75(5), 673–689. <https://doi.org/10.1111/puar.12415>
- Carr, J. B., & Karuppusamy, S. (2008). The Adapted Cities Framework - On Enhancing Its Use in Empirical Research. *Urban Affairs Review*, 43(6), 875–886.
- Carr, J. B., & Karuppusamy, S. (2010). Reassessing the Link Between City Structure and Fiscal Policy: Is the Problem Poor Measures of Governmental Structure? *The American Review of Public Administration*, 40(2), 209–228. <https://doi.org/10.1177/0275074009334641>
- Chan, Y. L. (2004). Use of capital budgeting techniques and an analytic approach to capital investment decisions in Canadian municipal governments. *Public Budgeting & Finance*, 24(2), 40–58. <https://doi.org/10.1111/j.0275-1100.2004.02402003.x>
- Chen, C., & Bartle, J. R. (2017). Infrastructure Financing: A Guide for Local Government Managers. 34. http://icma.org/en/icma/knowledge_network/documents/kn/Document/308902/Infrastructure_Financing_A_Guide_for_Local_Government_Managers
- Choudhury, E., Clingermayer, J. C., & Dasse, C. M. (2003). An Analysis of Institutional and Political Factors Affecting State Capital Expenditure. *International Journal of Public Administration*, 26(4), 373–398. <https://doi.org/10.1081/PAD-120019226>
- Chung, I. (2013). Adoption of a separate capital budget in local governments: Empirical evidence from Georgia. *Journal of Public Budgeting, Accounting & Finance*, 25(4), 617–643.

- Coate, S., & Knight, B. (2011). Government form and public spending: Theory and evidence from US municipalities. *American Economic Journal: Economic Policy*, 3(3), 82–112. <https://doi.org/10.1257/pol.3.3.82>
- Costa-i-Font, J., Rodriguez-Oreggia, E., & Lunapla, D. (2003). Political competition and pork-barrel politics in the allocation of public investment in Mexico. *Public choice*, 116(1-2), 185-204.
- Crain, W. M., & Oakley, L. K. (1995). The Politics of Infrastructure. *The Journal of Law & Economics*, 38(1), 1–17.
- Cronqvist, Lasse. 2019. Tosmana [Version 1.61]. University of Trier. Internet: <https://www.tosmana.net>
- Dalenberg, D. R., & Duffy-Deno, K. T. (1991). At-large versus ward elections: Implications for public infrastructure. *Public Choice*, 70(3), 335-342.
- Deno, K. T., & Mehay, S. L. (1987). Municipal management structure and fiscal performance: do city managers make a difference?. *Southern Economic Journal*, 627-642.
- DeSantis, V., & Renner, T. (2002). City government structures: An attempt at clarification. *State and Local Government Review*, 34(2), 95–104. <https://doi.org/10.2307/4355310>
- Doss, C. B. (1987). The Use of Capital Budgeting Procedures in U.S. Cities. *Public Budgeting & Finance*, 7(3), 57–69. <https://doi.org/10.1111/1540-5850.d01-232>
- Drass, K.A. (1992). Qualitative Comparative Analysis Manual [Computer software: Version 3.0].
- Eberts, R. W., & Fox, W. F. (1992). The Effect of Federal Policies on Local Public Infrastructure Investment. *Public Finance Quarterly*, 20(4), 557–571.
- Ermasova, N., & Vick, D. (2015). Investment Analysis and Methods of Estimating the Capital Costs in Capital Budgeting at the State Level in the USA. *American International Journal of Social Science*, 4(2), 1–9.
- Eskridge, R. D., & French, P. E. (2011). Using the adapted cities framework to evaluate per capita expenditures in small US municipalities. *Journal of Public Budgeting, Accounting & Financial Management*, 23(3), 338-360.
- Fisher, R. C., & Wassmer, R. W. (2015). An Analysis of State–Local Government Capital Expenditure During the 2000s. *Public Budgeting & Finance*, 35(1), 3–28.
- Forrester, J. P. (1993). Municipal Capital Budgeting: An Examination. *Public Budgeting & Finance*, 13(2), 85–103. <https://doi.org/10.1111/1540-5850.00977>
- Frederickson, H. G., Johnson, G. A., & Wood, C. H. (2004). The adapted city: Institutional dynamics and structural change. Armonk, N.Y: M.E. Sharpe.

- Frederickson, H., & Johnson, G. (2001). The Adapted American City: A Study of Institutional Dynamics. *Urban Affairs Review*, 36(6), 872–884. <https://doi.org/10.1177/10780870122185127>
- French, P. E. (2003). Municipal Government: Does Structure Make a Difference in Small Cities and Towns? *Politics & Policy*, 31(4), 694–725. <https://doi.org/10.1093/bja/71.5.747>
- French, P. E. (2004). Form of Government and Per Capita Expenditures: an Evaluation of Small Cities and Towns. *Journal of Public Budgeting, Accounting & Financial Management*, 16(2), 193–209.
- Halachmi, A., & Sekwat, A. (1997). Strategic capital budgeting and planning: Prospects at the county level. *Public Budgeting and Financial Management*, 8(4), 578–596.
- Hopland, A. O. (2016). Long-run relationship between investment and maintenance in local governments. *Facilities*, 34(11–12), 703–722. <https://doi.org/10.1108/F-02-2015-0006>
- Kamensky, J. M. (1984). Budgeting for State and Local Infrastructure: Developing a Strategy. *Public Budgeting and Finance*, 4(3), 3–17. <https://doi.org/10.1111/1540-5850.00646>
- La Porte, T. R. (2015). Chapter I. Organized Social Complexity: Explication of a Concept. In *Organized Social Complexity* (pp. 3–39). Princeton University Press.
- Lancaster, T. D. (1986). Electoral structures and pork barrel politics. *International Political Science Review*, 7(1), 67–81.
- Lombard, P. C., Sinha, K. C., & Brown, D. J. (1992). Investigation of the Relationship Between Highway Infrastructure and Economic Development in Indiana. *Transportation Research Record*, 1359, 76–81.
- MacManus, S. A. (2004). “Bricks and Mortar Politics”: How Infrastructure Decisions Defeat Incumbents. *Public Budgeting and Finance*, 24(Spring), 96–112. <https://doi.org/10.1111/j.0275-1100.2004.02401005.x>
- Marlowe, J. (2013). Strategy, Priority, and Municipal Capital budget Reform: Three Cases from the Great Recession. *Journal of Public Budgeting, Accounting and Financial Management*, 25(4), 693–718.
- Marlowe, J., Rivenbark, W. C., & Vogt, A. J. (2009). Capital budgeting and finance: A guide for local governments. ICMA Press.
- Mikesell, J. L. (2003). *Fiscal Administration: Analysis and Applications for the Public Sector*. Independence, KY: Thomson Wadsworth.
- Miller, A. (1988). Selecting Capital Investment Projects for Local Governments. *Public Budgeting and Finance*, 8(3), 63–77. <https://doi.org/10.1111/1540-5850.00792>

- Miranda, Rowan; Hillman, N. (1996). Reengineering capital budgeting. *Public Budgeting and Financial Management*, 8(3), 360–383.
- Moak, L. L., & Hillhouse, A. M. (1975). Concepts and Practices in Local Government Finance. Chicago, IL: Municipal Finance Officers Association of the United States and Canada.
- Munnell, A. H. (1990). How Does Public Infrastructure Affect Regional Economic Performance? *New England Economic Review*, 69–103.
- Nalbandian, J. (1990). Tenets of Contemporary Professionalism in Local Government. *Public Administration Review*, 50(6), 654–662.
- Nelson, K. L., & Svara, J. H. (2010). Adaptation of Models versus Variations in Form: Classifying Structures of City Government. *Urban Affairs Review*, 45(4), 544–562. <https://doi.org/10.1177/1078087409356349>
- Nunn, s. (1990). Budgeting for public capital: reinterpreting traditional views of urban infrastructure provision. *Journal of Urban Affairs*, 12(4), 327–344. <https://doi.org/10.1111/j.1467-9906.1990.tb00225.x>
- Nunn, S. (1996). Urban Infrastructure Policies and Capital Spending in City Manager and Strong Mayor Cities. *The American Review of Public Administration*. <https://doi.org/10.1177/027507409602600105>
- Pagano, M. A. (1984). Notes on Capital Budgeting. *Public Budgeting & Finance*, 4(3), 31–40.
- Pagano, M. a. (2002). Municipal Capital Spending during the “Boom.” *Public Budgeting & Finance*, 22(2), 1–20. <https://doi.org/10.1111/1540-5850.00070>
- Patton, M. Q. (2002). Qualitative research and evaluation methods (3rd ed.). Thousand Oaks, Calif: Sage Publications.
- Portner, E. E. (2011). Examining the effect of multi-year capital budgeting: does forward thinking enhance financial condition?, 1–26.
- Poterba, J. M. (1995). Capital budgets, borrowing rules, and state capital spending. *Journal of Public Economics*, 56(2), 165–187. [https://doi.org/10.1016/0047-2727\(94\)01431-M](https://doi.org/10.1016/0047-2727(94)01431-M)
- Przeworski, A., & Teune, H. (1970). The logic of comparative social inquiry. New York: Wiley-Interscience.
- Ragin, C. C. (2014). The comparative method: Moving beyond qualitative and quantitative strategies. Univ of California Press.
- Ragin, Charles C. 1997. “Turning the Tables: How Case- Oriented Research Challenges Variable-Oriented Research.” *Comparative Social Research*, 16:27–42.

- Rihoux, B., & Marx, A. (2013). Qualitative comparative analysis at 25: State of play and agenda. *Political Research Quarterly*, 167-171.
- Rihoux, B., Álamos-Concha, P., Bol, D., Marx, A., & Rezsöházy, I. (2013). From niche to mainstream method? A comprehensive mapping of QCA applications in journal articles from 1984 to 2011. *Political Research Quarterly*, 175-184.
- Sekwat, A. (1999). Capital Budgeting Practices Among Tennessee Municipal Governments. *Government Finance Review*, (June), 15–19.
- Simon, H. (1962). The Architecture of Complexity. *Proceedings of the American Philosophical Society*, 106(6), 467-482. Retrieved May 3, 2021, from <http://www.jstor.org/stable/985254>
- Simon, H. A. (1969). *The sciences of the artificial*. MIT press.
- Srithongrung, A. S. (2008). The Impacts of State Capital Management Programs on State Economic Performance. *Public Budgeting & Finance*, 28(3), 83–107. <https://doi.org/10.1111/j.1540-5850.2008.00912.x>
- Srithongrung, A. S. (2010). State Capital Improvement Programs and Institutional Arrangements for Capital Budgeting: The Case of Illinois. *Journal of Public Budgeting, Accounting & Financial Management*, 22(3), 407–430.
- Stumm, T. J., & Corrigan, M. T. (1998). City managers: Do they promote fiscal efficiency? *Journal of Urban Affairs*, 20(3), 343–351. <https://doi.org/10.5815/jjigsp.2012.01.06>
- Svara, J. H. (1985). Dichotomy and Duality: Reconceptualizing the Relationship between Policy and Administration in Council-Manager Cities. *Public Administration Review*, 45(1), 221–232.
- Temple, J. (1994). The Debt/Tax Choice in the Financing of State and Local Capital Expenditures. *Journal of Regional Science*, 34(4), 529–547. <https://doi.org/10.1111/j.1467-9787.1994.tb00881.x>
- Wang, W., & Wu, Y. (2018). Why Are We Lagging Behind? An Empirical Analysis of Municipal Capital Spending in the United States. *Public Budgeting & Finance*, 38(3), 1–16.
- Weingast, B. R., Shepsle, K. A., & Johnsen, C. (1981). The political economy of benefits and costs: A neoclassical approach to distributive politics. *Journal of political Economy*, 89(4), 642-664.
- Yusuf, J.-E. W., & Srithongrung, A. S. (2017). Capital management: Advancing theory and practice. *Journal of Public Budgeting, Accounting and Financial Management*, 29(2), 182–208.

APPENDICES

Appendix 1 – Survey Questionnaire

SECTION A: PRIMING THE PUMP

A1) Thinking about how much in total your government spends for capital infrastructure and operations, how important is capital infrastructure spending relative to operational spending?

<i>Extremely Important</i>	<i>Moderately Important</i>	<i>Slightly Important</i>	<i>Relatively Unimportant</i>	<i>No capital spending</i>
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A2) Thinking about how much your government spends for capital infrastructure during the fiscal year, what percentage of capital spending goes to the following broad purposes?

	<i>100 % of capital spending</i>	<i>75 % of capital spending</i>	<i>50 % of capital spending</i>	<i>25 % of capital spending</i>	<i>0 % of capital spending</i>	<i>Not apply</i>
Major maintenance of existing infrastructure						
Replacement of existing infrastructure						
Building new infrastructure						

SECTION B: THE PROCESS

B1) To what extent does your government make most decisions about current and future capital infrastructure spending through the regular, yearly operating budget process? In other words, to what extent are decisions about capital infrastructure and spending made in conjunction with and at the same time as decisions about the yearly operating budget?

To a great extent

To some extent

Hardly or none at all

B2) Does your government conduct any planning for capital infrastructure spending and financing separate from planning and preparing the operating budget?

YES

NO

B3) To what extent is capital infrastructure spending guided primarily by yearly budget requests from departments that are responsible for building and maintaining infrastructure (e.g. the water department).

To a great extent

To some extent

Hardly or not at all

B4) To what extent would you say that your government's spending for capital projects is driven by a comprehensive or holistic view of capital spending needs in all areas of government?

To a great extent

To some extent

Hardly or not at all

B5) Does your government have a designated capital planning team (outside of the officials that prepare the operating budget)?

Yes Sort of No

If respond yes or sort of, then please answer question B6 below.

B6) Please identify below who is on the planning team and who is the chair or leader?

	<i>YES</i>	<i>NO</i>	<i>Chair</i>	<i>NA</i>
Mayor				
Selected council / board members				
Village/city manager or village/city administrator				
Chief financial officer / finance director				
Economic development coordinator				
Government urban planner				
Government engineers				
Department heads or representatives of departments with significant responsibility for government's infrastructure (e.g. water or public works)				
Beneficiaries or end users of infrastructure				
External advisors and firms (financial or engineering)				

B7) How often does your government hold public hearings /formal meetings with the council or board about current and future capital spending separate from hearings on the current operating budget?

Often or very frequently Sometimes Rarely or never

B8) How often does the mayor meet with government officials, included council or board members about current and future capital spending separate from hearings on the current operating budget?

Often or very frequently Sometimes Rarely or never

B9) To what extent are decisions about financing capital project made jointly or at the same time as decisions about current and future spending for capital infrastructure?

To a great extent To some extent Hardly or none at all

B10) To what extent are decisions about financing capital project made jointly or at the same time as decisions about taxes and other revenues for the operating budget?

To a great extent To some extent Hardly or none at all

B11) Is spending for capital projects in the current fiscal year presented within the operating budget document?

YES NO

B12) Does your government produce a *capital improvement plan* or similar document that presents a schedule of capital infrastructure projects that are contained within the plan?

YES

NO

If respond NO, skip to Question B17

B13) When a capital plan is developed, how many years of infrastructure spending is covered in the capital plan?

One year

two years

three years

four years

five years

six or more years

B14) How often is the capital plan updated?

Every
year

Every
2 years

Every
3 years

Every
4 years

Every
5+ years

B15) Does your government's council formally approve the CIP or capital planning document through resolution or ordinance?

YES

NO

B16) Does the capital plan include spending for major and / non-major maintenance of infrastructure (not just replacement and new infrastructure)?

The capital plan does not include major or minor maintenance

The capital plan includes major maintenance but not minor maintenance

The capital plan includes both major and minor maintenance

B17) Does your government produce a *periodic inspection plan (PIP)* or similar document that presents an accurate assessment of the physical conditions of capital facilities that are contained within the plan?

YES

NO

If respond NO, skip to Section C

B18) How often is the periodic inspection plan updated?

Every
year

Every
2 years

Every
3 years

Every
4 years

Every
5+ years

SECTION C: FACTORS IN CAPITAL DECISIONS

C1) Does your government assess its financial or debt capacity in determining capital spending and how to finance capital infrastructure projects?

NO for all projects.

YES for some projects only

YES for all projects

C2) Does your government assess the costs and benefits of financing options in determining how to finance capital infrastructure projects

NO for all projects.

YES for some projects only

YES for all projects

C3) Does your government maintain an inventory all long-term assets or assets above a dollar value (capital infrastructure)?

There is no inventory

There is a partial inventory.

There is a complete inventory

C4) How often does your government survey or assess the condition of existing infrastructure (or a sample of infrastructure) prior to making decisions about current and future capital spending?

Often or very frequently

Sometimes

Rarely or never

C5) How often does your government conduct needs assessments or demand analyses for new infrastructure?

Often or very frequently

Sometimes

Rarely or never

Not apply

C6) Does the planning process rank capital projects according to recognized criteria?

NO capital projects are ranked

Only SOME capital projects are ranked

ALL capital projects are ranked

C7) Please indicate the importance of the following individuals or groups to capital spending and financing decisions

	<i>Extremely Important</i>	<i>Moderately Important</i>	<i>Slightly Important</i>	<i>Not at all Important</i>	<i>Not Apply</i>
Mayor					
Individual council members					
CAO (city / village manager or city / village administrator)					
Economic development coordinator or planner					
Finance director / treasurer or representative of the finance department					
Directors of public works and / enterprise units in the government					
The general public					
End users of infrastructure: residents					
End users of infrastructure: businesses					

C8) Identify the ways in which council members are likely to influence decisions about capital spending and financing. Please check those that apply to your government.

Through public hearings on the budget	
Through public hearing on specific projects	
Through direct contact with staff from the department of public works and enterprise units	

C9) To what extent are citizens' preferences about capital spending and financing represented in the capital plan or government decisions about capital spending?

To a great extent

To some extent

To a small extent

Not at all

C10) Identify all the ways in which citizens are likely to influence decisions about capital spending and financing. Check those that apply to your government.

They participate in capital planning	
Through public hearings on the budget	
Through public hearing on specific projects	
Through direct contact with staff from the department of public works and enterprise units	
Through contact with council or board members	

C11) To what extent do each of the following items guide decisions about capital infrastructure spending and which projects to fund?

	<i>To a great extent</i>	<i>To some extent</i>	<i>Very little or not at all</i>	<i>Not apply / no item</i>
A strategic plan				
Land-use or comprehensive plan				
Municipal ordinances				
County ordinances				
State statutes and mandates				
The desires of elected officials				
Recommendations from staff in public works and enterprises				
Recommendations from external consultants				

C12) To what extent are decisions to invest in specific capital projects guided by the following factors:

	<i>To a great extent</i>	<i>To some extent</i>	<i>Very little or not at all</i>	<i>Not apply / no projects</i>
How soon a project will pay for itself and return on investment				
Impact of the project on the tax base(s) of the government				
The priorities of departmental heads responsible for infrastructure				
Political priorities and demands				
Demands for economic development				
Degree of citizen support				
Degree of support from business community				
Health and safety concerns				
Engineering requirements				
Impact of project on operating budget currently and in the future.				
The ratio of benefits to costs or net present value (benefits – costs)				
Urgency of the project				

C13) To what extent do industry standards (e.g. GFOA best practices) influence how decisions are made about capital spending and financing?

To a great extent

To some extent

To a small extent

Not at all

C14) Does your government have any established policies affecting decisions and practices in the following areas?

How and when capital planning will be conducted	
How capital spending will be financed	
How capital assets are valued and depreciated	
How capital assets will be managed	

SECTION D: FINANCING

D1) To what extent does your government use **borrowing** (pay as you use) to finance capital spending?

Always Usually Sometimes Very little Not at all

If respond very little or not at all, skip to D3

D2) To what extent does your government rely on the following methods of borrowing?

	<i>Always</i>	<i>Usually</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
GO Debt					
Revenue bonds					
Other bonds (e.g. lease revenue, private activity)					
Private bank loans and lines of credit					
<i>Other?</i>					

D3) To what extent does your government use **non-borrowing** methods (pay as you go) to finance capital spending?

Always Usually Sometimes Very little Not at all

If respond very little or not at all, skip to D5

D4) To what extent does your government rely on the following non-borrowing methods?

	<i>Always</i>	<i>Usually</i>	<i>Sometimes</i>	<i>Rarely</i>	<i>Never</i>
Taxes that are dedicated to or earmarked for capital projects					
Charges from the use or benefit of the capital project					
General taxes					
State grants or aid					
Federal grants or aid					
Reserves and fund balances					
Tax incremental financing, special service areas, or other land-based financing					
Direct private resources (e.g. impact fees, developer contributions, joint projects)					
Private equity, PPP, social impact bonds					
State or federal loan programs (e.g. revolving funds)					
<i>Other?</i>					

D5) To what extent are decisions about capital financing and how much to spend on capital projects guided by the following factors?

	<i>To a great extent</i>	<i>To some extent</i>	<i>Very little or not at all</i>	<i>Not apply</i>
Availability of funding from grants				
The cost of the funding mechanism				
The size of the project				
The type of project				
Political climate				
Short-term budget outlook (whether good times or bad times)				
Long-term financial outlook for government				
Bond rating				
Industry standards (e.g. GFOA recommended practices)				
Recognized municipal policies				
Recommendations from financial staff				
The level of reserves in government funds				
Impact on property taxes				
Whether it is an election year				
Whether there are development opportunities that cannot be postponed				

SECTION E: CRISIS/DISASTER MANAGEMENT

E1) In case of a natural disaster/flooding, does your government have a form of “emergency plan” in place that lays out strategies as to how to respond effectively to such disasters?

YES

NO

If respond *NO*, skip to Section F

E2) Does your government have a form of “rainy day fund” to tackle the future flooding/natural disasters if/when such disasters occur?

YES

NO

SECTION F: CONTEXT

F1) How much of the land in your jurisdiction has been developed?

All or almost all of the land in jurisdiction has been developed (built out)

Most of the land in the jurisdiction has been developed

Only some of the land in the jurisdiction has been developed.

Very little land in the jurisdiction has been developed

F2) How much of the total land in your jurisdiction was developed in the past but is currently underdeveloped and in need of redevelopment to improve land use and tax generation?

All or almost all of the land in the community is underdeveloped

Most of the land in the community is underdeveloped

Some of the land in the community is underdeveloped.

Very little of the land in the community is underdeveloped.

F3) How important is economic development compared to other services provided by your government, such as police or public works?

Extremely important

Important

Somewhat important

Not very important

Not important at all

F4) How would you grade the overall condition of capital assets and infrastructure in your jurisdiction?

	<i>A</i>	<i>B</i>	<i>C</i>	<i>D</i>	<i>F</i>	<i>Not apply</i>
Streets and roads						
Public buildings						
Water system						
Sewer system						
Parks and recreation areas.						
Public transit system						
Parking lots						
Storm water drainage						
Water treatment and reclamation						
<i>Others</i>						

Appendix 2 – List of Names and County of 32 Sample Governments

Government	County
Aurora	Kane
Bradley	Kankakee
Brookfield	Cook
Buffalo Grove	Cook
Charleston	Coles
Clarendon Hills	DuPage
Crete	Will
Darien	DuPage
DeKalb	DeKalb
Dixon	Lee
East Moline	Rock Island
Freeport	Stephenson
Glenview	Cook
Hoffman Estates	Cook
Lake Forest	Lake
McHenry	McHenry
Milan	Rock Island
Monticello	Piatt
Normal	McLean
Northbrook	Cook
Northfield	Cook
Northlake	Cook
Palos Heights	Cook
River Forest	Cook
Rochelle	Ogle
Rock Falls	Whiteside
Rockford	Winnebago
Tinley Park	Cook
Troy	Madison
Urbana	Champaign
Waukegan	Lake
Western Springs	Cook