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Punctuated Equilibrium and Bureaucratic Autonomy in American City Governments

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Several recent applications of Punctuated Equilibrium Theory (PET) have yielded compelling findings linking institutional design and change distributions, yet, much more work needs to be done to understand institutional arrangements that make punctuated processes more or less likely. In responding to the recent call for more research on unraveling particular mechanisms through which bureaucracy moderates the odds of policy punctuations, this research explores the potential of bureaucratic expertise and professionalism in fostering rational decision making, and thus the stability in change dynamics. One important feature of urban government receives close attention: the position by professionalized, trained bureaucrats in municipalities (city manager and chief administrative officer) and the effects of their discretion on altering municipal budgetary change distributions. Analysis of a novel dataset of fiscal policy changes, charter and census information of city governments in the State of Michigan, 2005–11, suggests city governments, on average, produce change patterns that conform to the expectations of PET; more importantly, it reveals that heightened levels of managerial discretion can have a significant implication for helping cities experience less abrupt, punctuated budget changes. The paper concludes with a discussion of the implications of these results for PET, policy change dynamics, and the design of city-governing institutions.

KEY WORDS: punctuated equilibrium, bureaucratic autonomy, policy stability, budgetary changes in U.S. city governments

近年来对间断均衡理论（*PET*）的若干应用取得了令人信服的研究结果，这些研究将制度设计和变化分布联系起来。然而，我们仍需做许多工作才能得以理解制度安排如何使间断过程更可能或更不可能发生。近来，研究者们呼吁去了解官僚体制是利用何种机制来调节政策间断发生的可能性的。为此，本研究探讨了官员的专业知识和专业素质在促进理性决策以及改革稳定性方面的潜力。我们密切关注市政府的一个重要特征，即市政当局的职位（城市经理，行政官员）都由专业且训练有素的官员担任；同时，我们也关注了这些官员自主改变市政预算分布所带来的影响。我们对密歇根州市政府自*2005*年至*2011*年间财政政策变化、法案以及人口普查信息的数据进行分析，结果表明，平均来说，市政府的政策变化模式符合*PET*的预期；更重要的是，我们的分析发现，管理自主权的提高可以减轻城市预算变化的突然性和间断性。本文最后讨论了这些结果对*PET*、政策变化动态以及城市管理制度设计的影响。

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1. Introduction

Punctuated equilibrium theory (PET) has re-energized research on the process of policy change. Borrowing from paleontological challenges to the Darwinian theory of evolution (Gould, 2007), PET captures a process in which forces for policy change overwhelm inherently incremental processes, resulting in rare episodes of large-scale bursts in policymaking activity. Two expectations characterize the model. First, governmental policy agendas mostly plod along incrementally, but are apt to drastic, nonincremental departures from the status quo. Empirical support for this expectation has been quite clear,[1] leading to a strong generalization in the literature that the pervasiveness of punctuated output distributions evidences a general empirical *law* of agenda change (Jones et al., 2009). The second expectation suggests that the more "friction" an institution imposes on its ability to adapt to changes in its external environment, the more punctuated the institution's processes of change will be. Empirical evidence conforming to this expectation has relied primarily on scholars' classification of stages of the policy process (Jones, Sulkin, & Larson, 2003) or entire government systems (Jones et al., 2009), in accordance with broad characteristics associated with friction stemming from either elevated decision costs or disproportionate information processing.

Recently, a spate of research has emerged to understand particular institutional *mechanisms* that produce more or less punctuated outputs by centering empirically on linking distribution of policy changes to institutional indicators capturing central elements of democratic governing institutions, such as shared policy powers, professionalism, and governing capacity (see Breunig & Koski, 2009; Epp & Baumgartner, 2016; Flink, 2015; Kwak, 2016; Robinson, Flink, & King, 2014; Ryu, 2011b). This research focuses on a wide range of government institutions (e.g., state governments, national governments, school districts), institutional environments (general purpose governments, national domains of policymaking, special purpose governments), and different moments in time, and varies with respect to method of empirical analysis. Notwithstanding these differences, a central takeaway emerges: the structure and design of a governing body matters for the distribution of policy changes produced by that body.

This paper contributes to this burgeoning, second phase of PET research (Jones & Baumgartner, 2012) by uncovering new hypotheses linking a particular element of modern institutional design to change patterns in city budgetary processes: the position of professionalized, trained bureaucrats in municipalities (city manager and chief administrative officer), and the effects of their discretion on budgetary changes. Despite the growing body of empirical evidence on various institutional mechanisms explaining budgetary patterns, research attention to bureaucracy as an important institution to influence policy dynamics has been less prominent within PET scholarship. Several propositions pertaining to bureaucracy, particularly its potential for rationalizing policymaking and management practices, can add enhanced understanding to institutional information processing—the core theoretical lens to explaining policy dynamics and punctuations. In responding to a recent call for more research on unraveling the association between bureaucratic qualities

and policy punctuations (Workman, Jones, & Jochim, 2009), this research explores the potential of bureaucratic expertise and professionalism of city managers in fostering rational decision making in municipalities, thus reducing abrupt, punctuated policy dynamics. We focus particularly on the effects of autonomy city managers varyingly exercise in their administrative and policy roles, as we expect it more accurately reflects the influence of managers in city management than does a simple binary variable indicating the presence or absence of city managers. Managerial autonomy is captured through a careful review of city charters, which stipulate varying kinds and degrees of responsibility and authority vested in city managers. The complexity and institutional diversity inherent in city charter configurations suggests that the policy processes of American city governments provide a superb research opportunity for developing and testing hypotheses linking fine-grained elements of institutional design to processes of change that do or do not conform to the expectations of punctuated equilibrium. Here we exploit this opportunity and develop a novel dataset of detailed charter information; fiscal policy changes; and socioeconomic, demographic, and political characteristics of all cities in the state of Michigan, 2005–11.

This paper proceeds as follows: First, we review major theoretical developments of policymaking leading up to PET and how each theory explains institutional decision-making processes and responsiveness to public demands. Next, we develop and introduce two competing hypotheses relating bureaucratic autonomy to policy changes. We then test these hypotheses using a unique dataset of city budgetary changes and fine-grained charter information. The paper concludes with a discussion of the implications of these results for PET and policy change dynamics, more broadly, as well as the institutional design of city governments.

2. Punctuated Equilibrium Theory and Urban Policymaking

In an ideal world, governmental decision makers would set policy agendas via an accurate definition and prioritization of public problems, and then agree upon value-maximizing solutions to these problems through analysis of a complete list of alternatives. Though this model of policy choice—often referred to as synoptic analysis—continues to guide decision makers in a variety of government agencies and institutional contexts, most scholars have come to think of it as more of an *ideal* than a descriptive model (Crecine, 1969; Cyert & March, 1963; Simon & Newell, 1971). Rather than viewing policy choice as the product of an idealized decision-making process, policy scholars in the mid-twentieth century would begin developing a more realistic and descriptively accurate model—an incremental model requiring neither complete information nor agreement among policymakers.

Incrementalism, initially introduced by Charles Lindblom, offers a sharp departure from the synoptic model. Dissatisfied with what he considered unrealistic assumptions, Lindblom (1959, 1979) and his colleagues (Braybrooke & Lindblom, 1963) observed that for many domains of policymaking, policy decisions are "boundedly rational," occurring slowly in small increments, and via what is termed "successive, limited comparisons." Whereas the theory of incrementalism is general, it

has been applied with particular success to the process of public budgeting (Crecine, 1969; Davis, Dempster, & Wildavsky, 1966; Fenno, 1966; Wildavsky, 1964; Wildavsky & Caiden, 1988). Soon after Lindblom introduced his influential model, scholars of budgetary processes began to observe in a number of national and subnational contexts that decisions regarding the allocation of public resources tend to "drift" (Padgett, 1980), rather than shift abruptly.

In the early 1990s, discipline-wide disputes over the meaning of incrementalism, its theoretical utility, and its empirical accuracy, would bring the study of policy change, more generally, to an impasse. Though most studies would find evidence of incremental processes—typically by looking at change patterns in budgetary outlays—many would also find large deviations from the baseline. Even in city governments, where spending is particularly constrained, argues Rubin (1990, p. 187), "many nonincremental decisions are part of the municipal budgeting process." One oft-referenced example of nonincremental processes at the national level comes from the classic work of Davis, Dempster, and Wildavsky (1974) who concede that although the budgetary process is "basically incremental, [it] does not respond to the needs of the economy and society, but only after sufficient pressure has been built up to cause abrupt changes precipitated by these events."

To explain these abrupt changes, Baumgartner and Jones (1993) introduced PET, which integrates core elements of incrementalism—bounded rationality, information costs, and institutional constraints—with an explanation for rare, but critical, reprioritization. Incrementalists clearly recognized that boundedly rational decision makers, constrained both by their own limited cognitive architecture as well as the institutional rules that guide their behavior, simply could not make systematic adjustments to changing environmental signals. But what the incrementalists overlooked is to account for information cues flowing from the surrounding environment and information (pressures, demands, and changing conditions) ignored at time t will accumulate. When demand for change exceeds a government's critical threshold, *overreaction* processes take over and large reprioritizations are more likely. The result is that governmental decision making is a combination of what Crecine (1969) called "governing by precedent," where previous solutions and solution procedures are roughly adapted to changing internal and external environments, and frenetic periods of "catching up" to aspects of these environments that have gone unmonitored.

Empirically, the vacillation between two change regimes—long periods of doing very little, punctuated by short bursts of doing a lot—has been borne out in a range of settings and governments (Jones & Baumgartner, 2012; True, Jones, & Baumgartner, 2014). The dynamics of rapid, attention-driven choice are not unknown to scholars of urban politics and policymaking (see Sapotichne & Jones, 2012, pp. 451–459). In an early work on budgetary changes in the 38 largest American cities, Jordan (2003) shows that expenditure patterns for some domains, including public buildings, parks, and recreation, are prone to dramatic increases or decreases, while basic city maintenance functions, such as police, fire, and sanitation, exhibit far fewer major changes.[2] Mortensen (2005), in a study of local budgeting in Denmark, also finds some variation in agenda change patterns across four domains of Danish local

policymaking. In more recent article, Sapotichne, Johnson, and Park (2013) find evidence of punctuated processes in city budgetary processes, with the degree of punctuatedness varying in interesting ways across city governments and by issue domain. In all, the authors conclude that considerable stability is certainly a central feature of city policy processes; but so too are rapid and extreme changes in policy priorities—particularly in issue areas outside the "basic maintenance" functions of city governments, such as community development, social welfare, recreation, and culture (Sapotichne et al., 2013).

3. Punctuations, Information Processing, and Bureaucratic Rationality

The brief literature review of modern policy process and change theories presents an interesting observation: behavioral perspectives that are well reflected in major theoretical developments in policy process. While cognitive-behavioral perspectives are increasingly integrated into contemporary research across disciplines, for policy and administration research, this idea of bounded human rationality was already embraced and incorporated into theory building from early on—as early as Herbert Simon's (1947) influential work, *Administrative Behavior*, which introduced such pioneering concepts as bounded rationality and satisfying administrative men (Grimmelikhuijsen, Jilke, Olsen, & Tummers, 2017; Moynihan, 2018). A common reasoning underlying both incrementalism and PET is also the recognition of human cognitive architecture and shortcomings. Clearly, Lindblom rooted his theory in the appreciation of limited cognition of decision makers and how they compensate for those limitations, based on which he anticipated the changing heuristics movement in social decision-making theory from the optimal, yet idealized synoptic method to a suboptimal, yet realistic local search (Atkinson, 2011). PET, based on disproportionate information processing, also finds that the key to unraveling the black box of policy change lies in understanding human and organizational rationality to process information, and the friction and costs involved in the process. The major difference is that while incrementalism remained as a largely descriptive model with little attention to environmental factors, PET has evolved into a full model of government information processing by elaborating informational inflow from the environment and also considering institutional variables, such as administrative and political configurations, that impose different rule of games, norms, expectations, and friction on the decision-making process. This article builds from this fundamental insight to consider whether the design of governing institutions can meaningfully impact cities' information processing and decision-making processes, thereby moderating the degree to which they experience lumpiness in their policy changes.

One particular institution receives close attention: bureaucracy. Two contending views of bureaucracy stand in sharp contrast. For some, like Max Weber and the Progressive reformers, bureaucracy is where technical superiority is realized by highly knowledgeable professionals, while for others, such as institutional design and political control advocates, it is a failing system whose hierarchical and formalized structures cause rigidity, inertia, and inefficiency (Chubb & Moe,

1988; McCubbins, Noll, & Weingast, 1987; Merton, 1968; Potoski & Woods, 2001; Robinson, 2004). Such polarizing views on bureaucracy have important implications for institutional processing and responsiveness; from the Weberian (and reformers') perspectives of bureaucracy, bureaucracy deviates from conflict-prone, inefficient, and costly management to rationalized, efficient, and stable, rather than punctuated, processes. For the latter, bureaucracy or, more specifically, its tendency to rigidly adhere to rules and formality, is an impediment to information flows within an organization. Thus, the more bureaucratized a system is, the harder it is to make prompt responses to external changes, eventually leading to increased costs and punctuations in its decision-making process.

Empirically, several studies have found little relationship between bureaucracy and increased policy punctuations (Flink, 2015; Robinson, Caver, Meier, & O'Toole, 2007; Robinson et al., 2014; Ryu, 2011a, 2011b). Several of these studies investigate one particular element of bureaucracy, namely centralization, and find the dampening effects of centralization on punctuations in various contexts. Especially, Ryu's (2011b) work shows a curvilinear relationship where centralization shows a negative association with punctuations, that is, centralization reduces the probability of punctuations, until it hits an excessive point and starts having quadratic effects leading to increased punctuated budgetary outputs. While these studies shed important light on the previously understudied effects of bureaucracy within PET, particular mechanisms through which bureaucracy moderates punctuated policy processes are still unknown; that is, we do not know yet whether such observed effects of bureaucracy are likely because (i) bureaucracy is not necessarily a source of added decision costs and punctuated dynamics; OR (ii) bureaucracy is an instrument for alleviating limited organizational attention spans and disproportionate information processing, thus leading to fewer punctuations (Workman et al., 2009).

The objective of this study is to contribute to these important discussions by adding empirical understanding to the latter proposition on bureaucratic rationality. In order to explore and empirically verify the potentially rationalizing force of bureaucracy, we turn to the position of professional city managers in urban governance. We particularly focus on the degree to which city managers meaningfully exercise autonomy in their administrative and policy roles, as we expect it more accurately reflects the influence of managers in city management than does a simple binary variable indicating the presence or the absence of city managers. We hypothesize that technically trained professionals in city governments help city institutions make timely, systematic adjustments to changing environmental signals, thus dampening policy punctuations. Our rationale for the research question traces back to the Progressive era—a time when corrupt political machines dominated and contentious political struggles were rife.

3.1. Hypotheses on Bureaucratic Autonomy and Policy Punctuations

One important theoretical and normative debate about local political institutions is regarding the position of city managers in the policy-making process.

The creation of city managers was a chief feature of the invention of the council–manager form of government that was part of the second amendment of the Model City Charter (Frederickson, Wood, & Logan, 2001). Indeed, the idea of delegating administrative responsibilities to professional managers was "the most sweeping and dramatic concept among the reforms of the Progressive era" (Frederickson, Johnson, & Wood, 2004). Having a professional manager imposes an important structural characteristic on urban governance. The introduction of the city manager was originally directed at improving one critical aspect of local government: efficiency. The center of reformers' attention was to get rid of political struggles resulting from ward elections and political leaders in public offices, which rendered city government inefficient in solving the problems facing cities (Welch & Bledsoe, 1988). By placing the mayoral administrative duties in the hands of a professionally trained city manager, reformers intended to restrain politically motivated, thus sometimes ill-designed policy will of the mayoral office (Bryant, 1976). Consequently, expectations arose that instituting reformed structures would allow city government to be governed "less on the basis of conflict and more on the basis of a rationalistic theory of administration" (Lineberry & Fowler, 1967). Given the reformers' idea on the role of city managers in city governance, Frederickson et al. (2004) suggest that the recent rising trend of unreformed cities adding chief administrative officers (CAO), a professionalized manager in a mayor–council system, is also an effort to improve a city government's technical competencies and service efficiency.

Central to this debate is the assumption that differing degrees of managerial autonomy are important, specifically as related to city governments' ability to efficiently convert needs, demands, and wants into policies. Their technical expertise as well as professional and rationalistic—rather than political—job characteristics would enable them to handle complex informational inputs and make policy recommendations in a timely manner, thereby helping cities make systematic adjustments to changing environments. This is especially true when decision making has stalled in the midst of increased inter-branch frictions arising from shared policy powers between executive and legislative branches of city institutions. Hence, it is expected that the heightened levels of discretion of professionalized, trained bureaucrats, even under separation of powers charter designs, can encourage more policy stability, producing less abrupt, more normally distributed budgetary changes than otherwise might be possible. Indeed, Robinson et al. (2007) explain that benefits of bureaucratization and increased professionalism through "the development of expertise or information-gathering capacities"—can outweigh institutional friction and facilitate rational information processing. O'Toole and Meier (2003) also find that bureaucracy functions as an instrument, rather than an obstacle, for enhancing the organization's ability to overcome institutional friction arising from conflicts of interest in policy processes and ultimately to adapt to the changing environment.

Based on the rationalistic theory of administration that technical superiority and expertise-driven professionalism rationalize the policymaking process, it is hypothesized that:

Hypothesis 1: Cities in which a HIGHER degree of discretion of city managers or CAOs is observed are LESS likely to experience a punctuated distribution of budgetary outputs.

Such a positive expectation about bureaucracy stands in sharp contrast to a few other streams of scholarship in public administration that are concerned with administrative discretion, because of its potential to be undemocratic and inefficient. This view undergirds the main theoretical framework of several scholarships, including political control, institutional design, and rational choice, which are largely concerned with instituting various control mechanisms, such as rewards, sanctions, fire alarm oversight, and monitoring (Balla, 1998; Bawn, 1995; Calvert, McCubbins & Weingast, 1989; McCubbins et al., 1987; Potoski & Woods, 2001). Unelected bureaucrats' discretion is a concern to democracy because of bureaucrats' use of expertise and professional judgment in what is traditionally deemed to be the realm of political power. Despite the absence of constitutional power to write legislation, ample research, notably in the fields of public administration, documents cases where bureaucrats—both at management and street level—exercise wide latitude through their implementation function (Brehm & Gates, 1997; Keiser, 1999; Selden, 1997). Faced with somewhat abstract and broad mandates of the legislature, bureaucrats' administrative roles expand to policy roles as they translate those ambiguities and uncertainties into concrete actions and policies that citizens actually experience (Keiser, 1999). Consequently, significant research attention is given to controlling bureaucratic discretion to ensure its responsiveness to the will of political institutions and of the public (Bawn, 1995; Calvert et al., 1989; McCubbins et al., 1987).

Anxiety over bureaucratic discretion also stems from dissatisfaction with bureaucracy as an incompetent and inefficient institution. Unlike the rationality enhancing expectations reformers had for professional and apolitical elites, it is often argued that several features of bureaucracy—centralized and standardized operating system, a rigid hierarchy, complicated institutional rules, etc., contribute to ineffective informational flows and bounded rationality of institutions (Robinson et al., 2014; Ryu, 2009). Bureaucracy and its emphasis on standards of operations, formality, and procedures, devised to achieve such values as consistency and precision, leading itself to be rather rigid and inert, then ironically results in the loss of its very promised merit: efficiency (Chubb & Moe, 1988). Self-reinforcing processes of bureaucracy also induce public agencies and agents to be unyielding to change, even when necessary for socially efficient outcomes; instead, they are often "locked into" a specific path set by initial social and historical conditions (Sinclair & Whitford, 2013). Institutionalism scholars also contend that if public agents make an adjustment at all, it is for vesting themselves with enhanced political legitimacy, rather than improving institutional performance (Ashworth, Boyne, & Delbridge, 2009).

Based on the political control of bureaucracy theory concerned with bureaucracy and its agents being unresponsive and inert, it is hypothesized that:

Hypothesis 2: Cities in which the higher degree of discretion is observed for city managers or CAOs are MORE likely to experience a punctuated distribution of budgetary outputs.

4. Michigan City Governments as Empirical Levers

This study covers all 278 cities in Michigan. Obvious trade-offs come with restricting analyses to cities within a single state. Previous studies of urban policy change in the United States have focused either on small samples of very large city governments (see Jordan, 2003) or longitudinal examinations of a single city (Booth, 1988). The latter approach limits scholars' abilities to explore the degree to which change patterns vary in accordance with different mixes of city- or domain-level forces. A larger-N approach provides more comparative leverage; yet choosing large urban centers precludes basic comparisons by size, complexity, or government form. Moreover, selecting a small national sample of cities creates problems related to state-level clustering, particularly since state constitutional and statutory environments are likely to impact city governments' capacity for responding to changing environmental signals (Frug & Barron, 2008). Therefore, we choose to examine the full population of Michigan city governments over seven fiscal years (2005–11). This design allows us to hold constant the state statutory and constitutional environment, policy history, and culture. Moreover, by examining cities in Michigan, we chose a state that is "middle-of-the-pack" on a number of key dimensions related to the autonomy of city governments,[3] a factor we believe helps expand the representativeness of our results.

5. City Governance Structures

Cities constantly evolve by modifying various institutional features, corresponding to a complex and growing environment. Two important trends of structural variations regarding city managers have emerged over the past few decades. First, in mayor–council governments—those in which the mayor's office and the city council share decision-making authority—U.S. cities have seen proliferation in the use of professional managers by creating CAOs (Frederickson, Logan, & Wood, 2003; Nelson & Svara, 2010). Second, quite contrary to the first trend, council–manager governments—those in which decision-making authority resides in the legislative branch—have seen calls for increased mayoral power, and thus return of democratic oversight to urban governance (Frederickson, Johnson, & Wood, 2004). According to Nelson and Svara's study (2010), which uses 1996 and 2001 Form of Government surveys of ICMA and data from the National League of Cities, 37 percent of cities surveyed with populations over 10,000 are mayor–council cities and, of those, 47 percent have a CAO. On the other hand, 53 percent of cities with populations over 10,000 are classified as council–manager form, 63 percent of which have a mayor elected at-large.

Table 1 shows how these trends are reflected in Michigan cities. In line with national trends, a nontrivial portion of mayor–council governments includes the presence of appointed professionals whose job responsibilities are clearly described in terms of administrative functions. On the other hand, 42 percent of council–manager governments have empowered mayors through at-large elections. These two trends are likely to have conflicting policy implications. Introduction of a CAO in mayor–council governments is certainly a movement toward more bureaucratized form. If the assumption on city managers' role in rationalizing city policymaking holds, mayor–council cities with a CAO should experience less punctuated dynamics in their budgetary processes than those without. On the other hand, empowerment of the mayor in council–manager government, through at-large election, is seen as a will to move toward a more politically responsive and democratized policymaking process (Frederickson et al., 2004). This may be seen as a retrospective move in designing city government institutions that can have some consequential implications on circumscribing powers of city professionals. Assuming that enhanced mayoral power through at-large election curbs managerial influence in city management, not to mention increasing friction with the council, this could increase volatility in budgetary processes. The next section empirically investigates these hypotheses.

6. Stochastic Processes and Modeling Punctuated Change

Policy change patterns are detected by examining annual city expenditures in six core budget functions. As a result of the structural constraints facing city lawmakers, major policy decisions in city governments involve budgetary decisions, and major budget decisions in city governments involve policy trade-offs. This may seem uncontroversial. Indeed, several scholars have argued that there is ample room for city policymakers to put their stamp on their city's policy agenda (Jones, 1983, p. 304; Rubin, 1990, pp. 186–187). Moreover, the use of city expenditures as a direct measure of policy prioritization is commonplace in a range of scholarly disciplines and fields, from political science (Gerber & Hopkins, 2011), to urban sociology (Clark, 1968), to public finance (MacDonald, 2008). The upshot here is that if you want to know something about city policy processes—whether it is about the prioritization of certain preferences over others, or the degree to which changes to policy priorities happen smoothly over time, or via disjointed lurches—budgetary processes,

Table 1. Configurations of Governance Structure in Michigan (272 Michigan Cities, 2012)

Mayor–Council Governments		Council–Manager Governments	
(*N* = 85)		(*N* = 187)	
Pure (no CAO)	Appointed CAO	Pure (apptd. mayor)	Mayor is elected
40 cities (47%)	45 cities (53%)	109 cities (58%)	78 cities (42%)

Note: Excludes four Michigan cities that do not have specific information re: the key features considered here.

politics, and outcomes are the places to look. The six core budget functions reviewed are summarized in Table A1 in the Appendix. The fiscal data for these functions were made available by the Michigan Department of Treasury (MDT).[4]

To facilitate direct comparison with national and subnational results, our operationalization builds from canonical research on agenda change (Breunig & Jones, 2011). For each budget function for each city year, we compute the annual change by taking the observed proportion of spending on this function in a given year, minus the previous year's observed proportion of spending. We then divide by the previous year's proportion.[5] This measure, which provides a relative measure of change based on (i) the prioritization of the function in the previous year and (ii) the prioritization of other functions, is widely employed in classic studies of budgetary change (see Davis et al., 1974; Wildavsky & Caiden, 2004), and in research testing incrementalism and punctuated equilibrium theories in a range of settings and institutions (see Jones & Baumgartner, 2012).[6]

To test our hypotheses, year-to-year percentage changes are pooled across all city years. Much existing research on policy change has adopted an approach that centers on the comparison of change distributions (Baumgartner et al., 2009; Jones et al., 2003, 2009). This method is quite appealing since it values the entire distribution of governmental outputs, not merely the mean or mean difference. We follow this line of research by employing both graphical and statistical techniques to assess evidence of nonincremental change distributions.

The chief graphical tool is a histogram that displays the probability densities of positive/negative, and small/moderate/large, agenda changes. Beginning with Padgett (1980), a great deal of recent work on policy change has related distributional forms of year-to-year changes to internal processes. Incremental processes are mostly characterized by a Gaussian distribution of year-to-year changes (see Jones & Baumgartner, 2005, pp. 120–136; Padgett, 1980, pp. 361–363): some changes are large, but most are in the middle, with a large number of modest changes.[7] Under the standard assumptions of incrementalism, decision makers make proportionate responses to environmental changes ("rational updating") and, thus, any policy adjustment, following the Central Limit Theorem, would follow a random walk, resulting in a normal distribution (Jones & Baumgartner, 2005). On the other hand, disproportionate and punctuated processes produce output distributions shown to be characterized by most changes at the center (peakedness), an underrepresentation of moderate changes (weak shoulders), and an overrepresentation of very large changes (fat tails). While the punctuated model is often differentiated from the incremental model for its overrepresentation of small and large changes, the most apparent difference between the two indeed lies in the fat tails. This is because the rational updating assumed for incrementalism pertains only to exogenous environmental factors, which are only one part of budgetary decision making; the other part is a fixed portion, also known as a budget base, mostly represented as less than 5 percent changes in public budgeting. These marginal changes, not assumed to be proportionally updated, then form a high density around the center of the distribution even under incrementalism, and thus result in a high peak (higher than what is assumed for a normal distribution), while the rest of the increments are normally

distributed (Ryu, 2011b).[8] Given that peakedness—one feature of a leptokurtic distribution—is commonly observed in the incremental model and the punctuated model, this study focuses on fat tails. The focus on large changes is also beneficial as past research tended to combine medium and large size budgetary changes into one nonincremental category when the two could, in fact, have meaningfully different implications for analysis (Flink, 2015). We, therefore, compare the probability of large positive and negative changes—both together and separately—as a sign of policy punctuations.

In Figure 1, we pool across the six core budget functions for all 278 Michigan cities across seven fiscal years resulting in 7,756 observations of annual agenda changes. The right-hand panel plots the frequency distribution of all budgetary changes against a hypothetical Gaussian distribution generated with the same sample mean and variance. For presentation purposes, all changes greater than 200 percent are recoded at 200.[9] The values plotted on the left-hand panel are randomly generated from a truncated normal distribution (truncated at -100 percent, since no annual budget allocation can experience a decrease greater than the previous year's value).

Figure 1 provides a clear graphical comparison of our empirical distribution of policy agenda changes to the expectations of PET. A great many marginal changes are apparent (the sharp peaks displayed in the panel on the right). But so, too, are the few moderate changes and an overabundance of sizable cuts (note the frequency of 95–100 percent cuts) and very large increases (note the frequency of increases

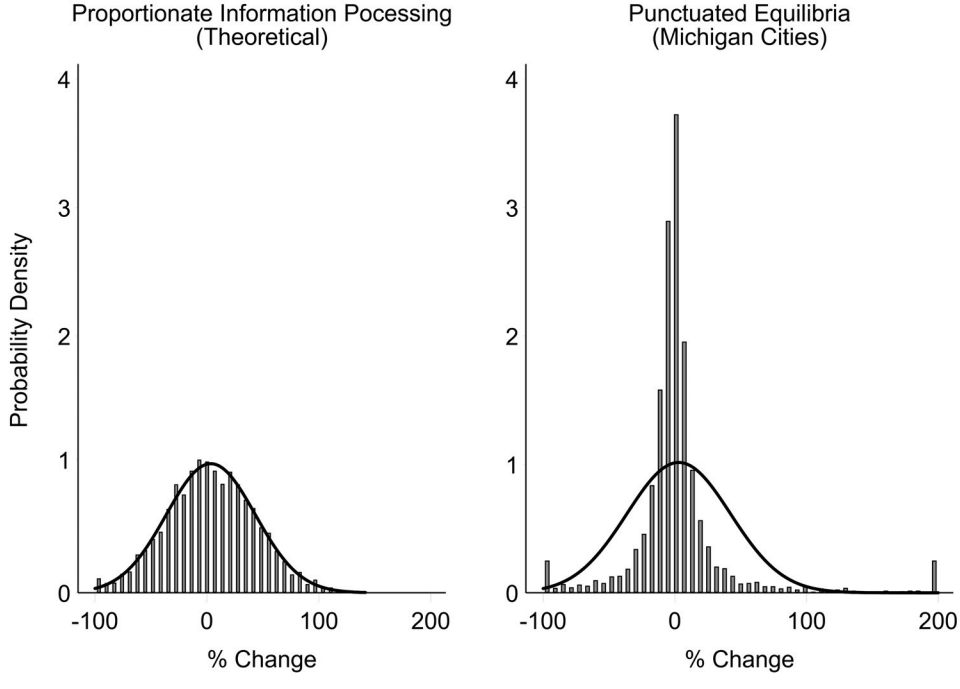

Figure 1. Comparison of Budgetary Change Distributions.

of 200 percent or greater). Figure 1 provides visual evidence that agenda changes in Michigan cities are distributed in accordance with the punctuated equilibrium framework: city policy processes are fundamentally disruptive, and city lawmakers respond to social and intergovernmental inputs in a disjunctive (not incremental) manner.

7. Regression Analysis

7.1. Dependent Variable

To examine change patterns by city government and institutions, we move beyond graphical verification to a multiple regression approach suggested by a number of recent studies (Flink, 2015; Robinson et al., 2007; Ryu, 2009). We begin with distinguishing policy changes of different magnitudes—small, medium, and large, following Robinson et al. (2007). Figure 2 shows a discrete choice model, where the changes are categorized into categorical variables of different magnitudes based on the cut-points where the observed distribution crosses over the Gaussian normal distribution. Moderate changes are those found in categories 2 (negative medium changes) and 4 (positive medium changes), and are fiscal policy changes that fall below the normal expectations. Category 3 has marginal changes,

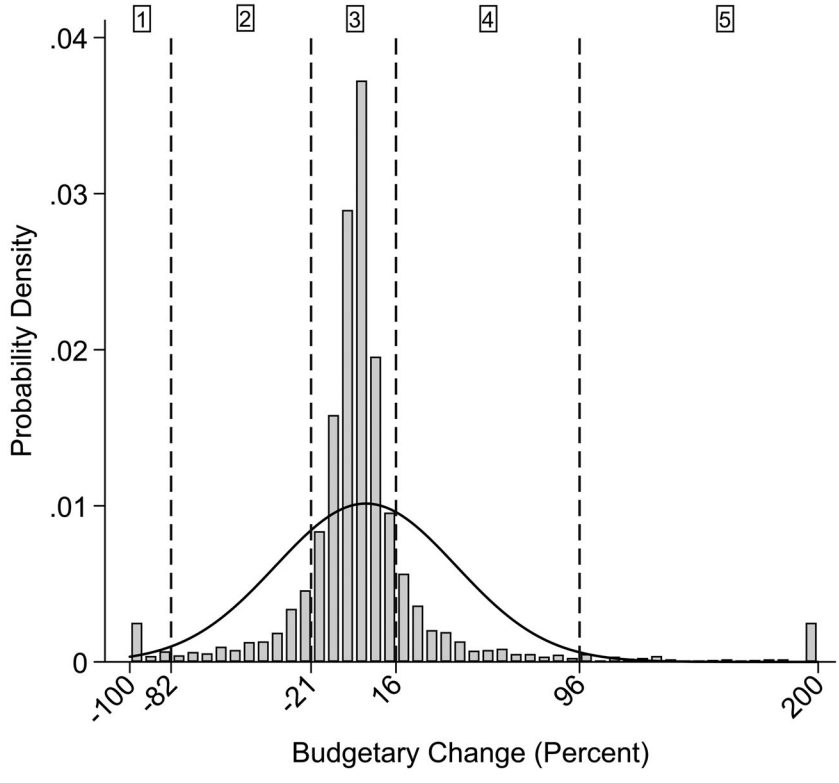

Figure 2. Budgetary Change Distribution with Cut-points.

whereas categories 1 and 5 have large, punctuated changes. As visually indicated above, our sample displays a high number of small changes centering around the mean, with large changes more frequently represented than a normal distribution. Table 2 reports the frequency of budgetary changes within each change category. Of those change categories, categories 1 and 5 constitute our dependent variable. The two categories will be examined together and also separately to see if the expected effects of city managers are borne out differently depending on the direction of policy changes.

7.2. Independent Variables

Information on specific institutional attributes related to managerial authority was collected through detailed scrutiny of city charters for Michigan cities. Among those various institutional variables, the key items deemed to explain managerial position and autonomy in city governance were selected for the use of factor analysis (FA). Considering the differential effects that the two distinct constitutional government platforms can impose on the structure within each form, two separate FA are run (one for mayor–council and the other for council–manager), using the identical items. Following research by Lubell, Feiock, and Ramirez De La Cruz (2009), the binary (Yes==1; No==0) variables associated with explaining managerial autonomy were chosen. These include appointment power over department heads and staff, budgetary authority of agents (i.e., a CAO in mayor–council and a manager in council–manager type), and the corresponding variables of principals that each is responsible to (i.e., CAO to the mayor and city manager to the council). Given the dichotomous nature, tetrachoric correlation was used to construct the correlation matrix. The prime goal of factor analysis is to identify interpretable simple structure (loadings < 0.3 on only one factor), and this is achieved in most of the items of analysis. Both for manager–council and mayor–council government, factor analysis yielded two factors with eigen values greater than one; the full factor loadings for the two separate FA are reported in Tables A2 and A4 in the Appendix. Oblique factor rotation was then performed to allow factors to be correlated to each other, following Tabachnick, Fidell, and Osterlind's (2001) suggestion that the correlation matrix for the factors that produces the correlation around 0.32 and above indicates the sufficient degree of variance that warrants oblique rotation. All the items related to appointment power load on the factor1—labeled as managerial

Table 2. Distribution of Budgetary Changes

Change Categories	Frequency	Percent
Large negative change (punctuation)	118	1.52
Medium negative change	1,004	12.94
Small change	5,200	67.04
Medium positive change	1,228	15.83
Large positive change (punctuation)	206	2.66
Total (*N*)	7,756	100.00

administrative autonomy. On the other hand, factor2 has high loadings for managers' budgetary authority with a very simple structure—labeled as managerial policy autonomy. Policy autonomy is conceptualized as more direct influence on city policy changes, compared with administrative autonomy. The average, minimum, and maximum regression scores of the managerial autonomy factors in council–manager form and mayor–council form are presented in Tables A3 and A5 in the Appendix, respectively.

Several variables are also included in the model to obtain the true paribus effect of managerial discretion. In addition to the two institutional variables that explain managerial autonomy, other key institutional variables that can have an important impact both on the degree of managerial autonomy and the policymaking process are controlled. First, since the primary interest of this is to understand the effects of the expected professionalism of city managers on rationalizing city management, we control for whether or not manager dismissal processes are codified in the charter, as the practice of arbitrary dismissal could influence managers' exercising autonomy and judgment in their work. In addition, because the above FA only considers the balance between a manager and the political principal, whom the manager is directly responsible to (in other words, the balance between the mayor–CAO and the balance between the council–manager), we also take into account the possible influence from the other principal part who has the potential to influence the manager's autonomy. For the mayor–council government, the following key mayoral variables are included in estimating mayoral impact: a mayor is elected at large; a mayor has a veto; and a mayor serves a long term.[10] With the assumption that these three variables contribute to explaining mayoral strengths, they could affect, either directly or indirectly, the policymaking process, as well as the degree of autonomy the manager exercises. The counterparts in mayor–council government are as follows: the council is elected at large; the council has a budgetary and/or administrative authority; and the council serves a long term.

City-level determinants of policy change are also controlled for. Using U.S. census data, the model includes total population (in 1,000s) for each city, as well as population density, to account for possible variation in patterns of policy change for central cities, suburbs, and more rural Michigan cities. Per capita real income (in 1,000s) controls for differences in change patterns between more and less affluent cities. A state partisan voting index from the Charlie Cook Political Report is used to capture cities' ideological leanings toward the Democratic or Republican Party. Year dummies are also incorporated into the regression models. Table 3 reports the detailed description and operationalization of all variables.

8. Regression Analysis Results

Since our dependent variable is a binary variable indicating whether or not the outcome is a large budgetary change from category 1 and 5, we employ logistic regression. Standard errors are clustered at city level to account for any unobserved within-city correlations arising from the panel structure of the data; this corrects for potential underestimation of standard errors, which could result in giving a false

Table 3. Description of Variables

Variable Name	Variable Description
Dependent variable	
Punctuations (large budgetary changes)	A binary variable indicating if a change is either from change category 1 or 5, which contains large changes. A total of five change categories contain annual changes computed by taking the observed proportion of spending in a given year minus the previous year's observed proportion of spending. *Source: Michigan Department of Treasury*
Independent variables	
Administrative autonomy	A continuous factor obtained through factor analysis, which reveals a latent structure underlying items relating to the appointment power of managers and their principals. The latent structure is conceptualized as a degree to which a city manager exercises administrative autonomy. *Source: Author's own dataset containing the charter information of all MI cities*
Policy autonomy	A continuous factor obtained through factor analysis, which reveals a latent structure underlying items relating to the budgetary authority of managers and their principals. The latent structure is conceptualized as the degree to which a city manager exercises policy autonomy. *Source: Author's own dataset containing the charter information of all MI cities*
Institutional controls	
Mayoral strength	The following three are meant to capture mayoral influence on city management and policymaking of council–manager cities.
Mayor-at-large	A binary variable indicating if a city has a mayor elected at large;
Mayoral veto	A binary variable indicating if a city grants the mayor veto power;
Mayor term	A binary variable indicating if the mayor serves longer than the average term length of the sample cities. *Source: Author's own dataset containing the charter information of all MI cities*
Council strength	The following three are meant to capture council influence on city management and policymaking of mayor–council cities.
Council-at-large	A binary variable indicating if the city council is elected at large;
Council budget authority	A binary variable indicating if the council prepares the budget;
Council term	A binary variable indicating if the council serves longer than the average term length of the sample cities. *Source: Author's own dataset containing the charter information of all MI cities*

Table 3. *Continued*

Variable Name	Variable Description
Sociodemographic, political controls	
Population 2000	Decennial census information on city population (in 1,000s). *Source: U.S. Census Bureau, 2000 Census of Population and Housing*
Population density 2000	Decennial census information on city population density. *Source: U.S. Census Bureau, 2000 Census of Population and Housing*
Per capital income 2000	Decennial census information on city per capita income (in 1,000s). *Source: U.S. Census Bureau, 2000 Census of Population and Housing*
Partisan voting index	An index variable indicating cities' ideological leanings toward Democratic and Republican Party. *Source: State partisan voting index from Charlie Cook Political Report*
Year	Dummy variables for each FY 2005–11

significance (Cameron & Trivedi, 2005). Using logistic regression, the two managerial autonomy variables—administrative and policy—were tested to see if both types of managerial autonomy make large changes less likely.

Table 4 reports regression results from the council–manager form of government. Due to the interpretative challenges of log-odds, the odds-ratios are also reported for better interpretation. Both administrative and policy roles of managers are, ceteris paribus, found to have a positive and statistically significant impact on dampening large policy changes, consistent with hypothesis 1 ($p = 0.036$, $p = 0.024$, respectively). Both administrative and policy autonomy have an odds ratio less than 1, indicating a negative association between managerial autonomy and large budgetary changes. In other words, the higher the autonomy a city manager exercises both in administrative and policy realms, from preparing the budget to appointing and supervising key public employees, for example, department heads and a treasurer, the less likely a city is to experience abrupt and dramatic budgetary changes. Given the strong significance of managerial autonomy even after controlling for a number of key institutional and demographic variables, we further explore to see if the significance continues to hold across different models. We particularly delve into possible variations in the observed effects, using subsamples that have only negative or positive budgetary changes. Table 5 displays odds ratios of three models: the first panel displays results using a full sample, followed by negative and positive changes, respectively. Results indicate that managerial policy autonomy has dampening effects across all models ($p = 0.024$, $p = 0.030$, $p = 0.035$), thus decreasing the odds of both large budget cuts and increases, while the effects of administrative autonomy found in a full model appear to be largely driven by dampening negative large changes ($p = 0.010$).[11] Other institutional variables are not found to be significant, while on the sociodemographics side, per capita income is negatively associated with the odds of large budgetary changes at less than 5 percent significance level.

Table 4. Managerial Autonomy and Probability of Punctuations (Council–Manager Form)

Independent Variables	Log-Odds	Odds-Ratio
Managerial variables		
Managerial admin autonomy	−0.397**	0.673**
	(−2.10)	(−2.10)
Managerial policy autonomy	−1.023**	0.360**
	(−2.26)	(−2.26)
Manager dismissal	−0.091	0.913
	(−0.53)	(−0.53)
Mayoral variables		
Mayor is elected at-large	−0.043	0.958
	(−0.24)	(−0.24)
Mayor has a veto	−0.946	0.388
	(−0.84)	(−0.84)
Mayor serves a long term	−0.305	0.737
	(−1.33)	(−1.33)
Socioeconomic variables		
Population 2000	−0.012*	0.989*
	(−1.83)	(−1.83)
Population density 2000	−0.064	0.938
	(−0.94)	(−0.94)
Per capita income 2000	−0.022*	0.979*
	(−1.75)	(−1.75)
Partisan voting index	−0.001	0.999
	(−0.08)	(−0.08)
Year dummies		
Year 2006 (1 = yes)	0.593**	1.809**
	(2.43)	(2.43)
Year 2007 (1 = yes)	0.336	1.399
	(1.28)	(1.28)
Year 2008 (1 = yes)	0.018	1.018
	(0.07)	(0.07)
Year 2009 (1 = yes)	−0.082	0.922
	(−0.31)	(−0.31)
Year 2010 (1 = yes)	−0.058	0.944
	(−0.22)	(−0.22)
Constant	−2.409***	0.089***
	(−5.33)	(−5.33)
Wald χ^2 = 46.34***		
Log likelihood = −814.1		
N = 5,036		

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$; T-statistics are in parentheses.

The effects of managerial administrative and policy autonomy are also examined in the mayor–council form of government. This form presents some analytic challenge: the structural differences are found even within the same form, that is, strong mayor and weak mayor, which then impose different relationships among policymaking actors and different cost structures in the decision-making process. For this reason, managerial autonomy variables are interacted with the government form, so the effects of different structural forms are appropriately modeled and controlled. Table 6 reports the log-odds and odds-ratio of a full model, and Table 7 presents, along with the full model, two other additional models to capture

Table 5. Odds Ratio of Full, Negative, and Positive Changes (Council–Manager Form)

Independent Variables	Full Model	Changes (–)	Changes (+)
Managerial variables			
Managerial admin autonomy	0.673**	0.540**	0.800
	(–2.10)	(–2.56)	(–0.96)
Managerial policy autonomy	0.360**	0.397**	0.356**
	(–2.26)	(–2.16)	(–2.11)
Manager dismissal	0.913	1.056	0.849
	(–0.53)	(0.23)	(–0.77)
Mayoral variables			
Mayor is elected at-large	0.958	0.900	1.003
	(–0.24)	(–0.44)	(0.01)
Mayor has a veto	0.338	1	0.530
	(–0.84)	(.)	(–0.57)
Mayor serves a long term	0.737	0.811	0.697
	(–1.33)	(–0.74)	(–1.34)
Socioeconomic variables			
Population 2000	0.989*	0.983*	0.991
	(–1.83)	(–1.80)	(–1.13)
Population density 2000	0.938	0.914	0.978
	(–0.94)	(–0.72)	(–0.23)
Per capita income 2000	0.979*	0.999	0.954***
	(–1.75)	(–0.07)	(–2.58)
Partisan voting index	0.999	0.999	1.001
	(–0.08)	(–0.12)	(0.04)
Year dummies			
Year 2006 (1 = yes)	1.809**	1.570	1.909**
	(2.43)	(1.12)	(2.03)
Year 2007 (1 = yes)	1.399	1.579	1.278
	(1.28)	(1.11)	(0.75)
Year 2008 (1 = yes)	1.018	1.019	1.016
	(0.07)	(0.05)	(0.05)
Year 2009 (1 = yes)	0.922	0.740	1.024
	(0.31)	(–0.68)	(0.07)
Year 2010 (1 = yes)	0.944	0.636	1.120
	(–0.22)	(–0.99)	(0.36)
Wald χ^2	46.34***	32.88***	34.37***
Log likelihood	–814.1	–339.1	–598.8
N	5,036	4,940	5,036

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$; *T*-statistics are in parentheses.

the potentially differential effects of managerial autonomy between negative and positive large changes.

No significant effect is found with the managerial administrative autonomy, which may be attributed to the fact that only a handful of MI cities have actually delegated appointment power to CAOs. However, managerial policy autonomy is strongly associated with decreased odds of large changes ($p = 0.011$). Additional model results further show that the effects of policy autonomy are coming mostly from dampening positive large changes ($p = 0.039$). This suggests that in cities where CAOs prepare the budget, large, abrupt budget increases are less likely. This finding yields particularly concrete evidence for the rationalizing effects of city managers. One potential drawback of the findings from the previous council–manager model is that the effects of managerial autonomy and of centralized authority are

Table 6. Managerial Autonomy and Punctuations (Mayor–Council Form)

Independent Variables	Log-Odds	Odds-Ratio
Managerial variables and interactions		
Managerial admin autonomy	0.301	1.351
	(0.47)	(0.47)
Managerial policy autonomy	−0.953**	0.386**
	(−2.55)	(−2.55)
Government type (weak mayor)	−0.521	0.594
	(−1.02)	(−1.02)
Admin autonomy*Weak mayor	−0.041	0.960
	(−0.06)	(−0.06)
Policy autonomy*Weak mayor	0.808*	2.243*
	(1.65)	(1.65)
Manager dismissal	0.297	1.346
	(0.48)	(0.48)
Council variables		
Council has a budget authority	−0.123	0.884
	(−0.42)	(−0.42)
Council is elected at-large	−0.416	0.660
	(−0.97)	(−0.97)
Council serves a long term	0.324	1.383
	(1.02)	(1.02)
Socioeconomic variables		
Population 2000	−0.021***	0.979***
	(−2.75)	(−2.75)
Population density 2000	0.020	1.020
	(0.25)	(0.25)
Per capita income 2000	0.002	1.002
	(0.25)	(0.25)
Partisan voting index	−0.020*	0.980*
	(−2.04)	(−2.04)
Year dummies		
Year 2006 (1 = yes)	0.069	1.071
	(0.20)	(0.20)
Year 2007 (1 = yes)	−0.363	0.695
	(−1.02)	(−1.02)
Year 2008 (1 = yes)	−0.057	0.945
	(−0.17)	(−0.17)
Year 2009 (1 = yes)	−0.140	0.870
	(−0.39)	(−0.39)
Year 2010 (1 = yes)	0.122	1.129
	(0.38)	(0.38)
Constant	−2.838**	0.059**
	(−1.98)	(−1.98)
Wald χ^2 = 53.23***		
Log likelihood = −405.2		
N = 2,202		

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$; T-statistics are in parentheses.

not clearly disentangled, because the factors in a council–manager model capture the latent administrative and policy power balance between single actors (managers) and multiple actors (the council members); in other words, it is unclear whether punctuations decrease because of the enhanced institutional rationality aided by managerial expertise and professionalism OR because of decreased decision-making costs resulting from centralizing decision making through a single person in lieu of

Table 7. Odds Ratio of Full, Negative, and Positive Changes (Mayor–Council Form)

Independent Variables	Full Model	Changes (–)	Changes (+)
Managerial variables			
Managerial admin autonomy	1.351 (0.47)	1.247 (0.25)	1.385 (0.29)
Managerial policy autonomy	0.386** (–2.55)	0.546 (–0.90)	0.277** (–2.07)
Government form	0.594 (–1.02)	0.712 (–0.55)	0.529 (–0.97)
Admin*Weak form	0.960 (–0.06)	1.392 (0.36)	0.797 (–0.19)
Policy*Weak form	2.243* (1.65)	1.199 (0.23)	3.809* (1.87)
Manager dismissal	1.346 (0.48)	1.252 (0.45)	1.387 (0.42)
Mayoral variables			
Council has a budget authority	0.884 (–0.42)	0.991 (–0.02)	0.810 (–0.62)
Council is elected at-large	0.660 (–0.97)	0.515 (–1.15)	0.846 (–0.43)
Council serves a long term	1.383 (1.02)	1.161 (0.36)	1.614 (1.33)
Socioeconomic variables			
Population 2000	0.979*** (–2.75)	0.987* (–1.76)	0.970*** (–3.30)
Population density 2000	1.020 (0.25)	1.054 (0.52)	0.996 (–0.04)
Per capita income 2000	1.002 (0.25)	0.997 (–0.29)	1.005 (0.67)
Partisan voting index	0.980** (–2.04)	0.986 (–1.07)	0.977** (–2.26)
Year dummies			
Year 2006 (1 = yes)	1.071 (0.20)	1.039 (0.09)	1.113 (0.24)
Year 2007 (1 = yes)	0.695 (–1.02)	0.727 (–0.63)	0.690 (–0.85)
Year 2008 (1 = yes)	0.945 (–0.17)	0.833 (–0.41)	1.095 (0.18)
Year 2009 (1 = yes)	0.870 (–0.39)	0.557 (–1.09)	1.266 (0.54)
Year 2010 (1 = yes)	1.129 (0.38)	0.363* (–1.67)	2.107* (1.88)
Wald χ^2	53.23***	25.94***	44.72***
Log likelihood	–405.2	–208.6	–260.9
N	2,202	2,202	2,202

*$p < 0.1$; **$p < 0.05$; ***$p < 0.01$; *T*-statistics are in parentheses.

expensive bargaining among multiple actors. On the other hand, the principal–agent relationship captured in mayor–council form factors represents the balance between individual, single actors, that is, mayor vs. CAO. This, therefore, to a degree, counters the criticism that some of the observed effects are driven by decreased decision costs resulting from centralized decision making and better teases out the rationalizing force of city managers.[12] Thus, the negative association between managerial

policy autonomy and the odds of positive large changes ($p = 0.039$) further augments the view that cities where budget authority lies in the hands of professional CAOs are less likely to experience large, abrupt budget increases. No significant interaction effects are observed between managerial autonomy and the government form. Population, as well as partisan index, are negatively associated with large budgetary increases in a statistically significant way, but their substantive significance, the odds, are largely negligible; still, the strong statistical significance of the population variable suggests that how populated a city is—rather than being central or suburban—better explains variations in large, dramatic budgetary changes.

9. Discussion and Conclusion

As city policy problems continue to grow in complexity, city policymakers must monitor, prioritize, and react to these problems. Recently, PET, which integrates core elements of incrementalism with an explanation for rare, but critical, reprioritizations based on disproportionate information processing, has been particularly recognized for its explanatory power with solid empirical evidence. As found by many other studies in the domain of punctuated equilibrium, this study also confirms that city governments, on average, produce change patterns that conform to the expectations of PET.

In an attempt to uncover what is possibly contributing to these patterns, one particular aspect of city institutions was examined: professional manager leadership across different platforms of government. The introduction of city managers was the will of the reformers in early U.S. history to separate administration from politics and to empower government to efficiently deal with issues facing the city through full utilization of the expertise and knowledge of professionally trained managers. The recent trends surrounding the position of city managers make the analysis especially timely and useful; the inclusion of an appointed professional is increasingly emphasized in traditionally unreformed government, while the reverse tendency is witnessed in council–manager government, as its structural focus seems to shift toward empowering a mayor to be more than just a figurehead. This makes city decision-making processes more political and transactional, as a result of increased inter-branch friction, which could then result in more policy punctuations over time, while the reverse effects are expected for the creation a professional managerial position.

Conforming to the rationalistic theory of administration, city managers in our sample are associated overall with stabilizing city annual outlays, and these dampening effects are particularly robust for their policy role. In other words, in cities that vest their managers with budgetary authority, punctuated and dramatic large budget changes are not as apparent as those that do not. Especially for large budget increases, the positive, stabilizing effects of managerial policy autonomy retain a strong significance consistently across all models. According to disproportionate information processing theory, this is an indication of enhanced rationality and cognitive capacity in the decision-making process. That is, our study results suggest that certain elements of municipal bureaucracy, such as bureaucratizing governing

institutions with managerial positions, can improve cities' capacity to process and prioritize environmental signals. This has an important implication for discussions on the functioning of bureaucracy in modern democratic governance. Bureaucracy has long been regarded more as an impediment than an aid to institutional responsiveness. The argument goes that its key characteristics, such as standardized rules and centralized and hierarchical structure, are not particularly apt for enabling smooth information flow within an organization, thus making proportionate responses to external demands less likely, while abrupt, sudden punctuations in policy process seem more likely. Several recent studies, however, find the decreasing effects of bureaucracy on punctuated policy processes (Flink, 2015; Robinson et al., 2007, 2014; Ryu, 2011b), yet the particular mechanisms behind such dampening effects of bureaucracy are still unknown. This study, through the case of city managers, focused on unraveling the story of bureaucratic rationality being assumed to help information processing and foster rational decision making in municipalities. How city managers expand institutional attention span and enhance rationality can only be assumed based on the reformers' expectations, yet the consistent statistical significance of managerial autonomy across different government platforms does lend empirical support to the reformers' hypothesis.

This finding also contributes to the recent controversy over city managers as a rationalizing force. The "conventional wisdom" on the advantages of instituting a professionalized executive position is increasingly questioned as lacking a solid base of empirical evidence (Carr, 2015). We argue that the weak evidence is partially due to the fact that many of the studies interested in the effects of managerial figures in urban management simply look at the forms of government, that is, manager–council versus council–mayor, when the two became structurally similar, as discussed above, and that managerial influence can substantially differ within the same form. This study, thus, moved beyond a simple dichotomy of presence and absence of city managers to examining the differing degrees of administrative and policy autonomy city managers exercise, as stipulated in city charters. A thorough investigation of managerial autonomy, using a sophisticated panel dataset and various empirical models, reveals that vesting city managers with a sufficient degree of autonomy could have positive implications for stabilizing municipal spending by helping cities experience less abrupt, punctuated budget changes.

Although this study presents hypotheses based on solid intellectual underpinnings of well-known theories and finds empirical evidence robust to multiple models, it is not without limitation. A better understanding is needed of how the assumed rationalizing force of city managers specifically moderates the odds of their institutions experiencing large punctuations. The reformers' hypothesis needs to be further elaborated and verified by adding specific observations on how the assumed rationalizing in decision making and implementation is empirically borne out in practice. Future research may contribute by offering narratives on how city managers, in practice, influence policymaking processes and dynamics by applying and demonstrating expertise and professionalism in their roles.

Understanding and modeling budgetary (policy) change is an onerous process for researchers, as it is complicated by a multiplicity of variables and the nonlinear

or interdependent interactions each of these variables has with one another (True et al., 2014). Fully acknowledging these challenges, this study was an attempt to contribute to the relentless efforts within PET to unravel the complicated process and advance the theories of policy change. We hope it will encourage further inquiry into various linkages between institutional factors and policy dynamics.

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Notes

1. As pointed out by Baumgartner and his colleagues (2009, p. 609), in each instance in which the friction approach has been employed, scholars have found considerable empirical support for these two "general empirical laws." Also see Mortensen (2005), Jordan (2003), John and Margetts (2003), and Breunig and Koski (2006).
2. Admittedly, it remains debatable to what extent the observed punctuations are likely to be the results of disproportional information processing, given that some of the policy domains involve decisions directly subjected to finite infrastructure lifespan.
3. According to one comprehensive analysis of the fiscal relationship between state governments and their cities, Wolman, McMammon, Bell, and Brunori (2010) provide evidence that Michigan's cities are 24th in terms of local government structural and functional responsibility, and legal scope; 28th in terms of tax, spending, and debt limits; 38th in terms of tax assessment limits; and 27th in terms of diversity of local revenue sources.
4. Data were compiled via a new automated system that systematizes city reporting for total revenues, total expenditures, and specific assets and liabilities. Reporting on the form (the federal F-65 form) is reconcilable to the applicable funds of the city's audited financial statements.
5. Thus, if City A spent 10 percent of its operating budget on public safety in 2005, and 15 percent in 2006, the change magnitude for 2006 would be a 50 percent increase, since $((0.15–0.10)/0.10) \times 100 = 50$.
6. This has been called the percentage–percentage method, since it essentially first-differences the proportion (percentage) of spending on each function (see Jones & Baumgartner, 2005, pp. 201–202). If the divisor is zero, the case is omitted.
7. Jones and Baumgartner (2005, pp. 120–121), building on Padgett's (1980) explain: "The Central Limit Theorem tells us that the sum of many independent factors will itself be normally distributed; the key is that many unrelated factors, not just one or two, determine the outcome … If governments were made up of one hundred relatively autonomous subsystems, each reacting to a wide variety of input factors, with consistent but relatively distant oversight from central authority, then we would observe a normal distribution of outcomes; some would go up substantially (when factors happened to combine in their favor), some would decline precipitously, and most would be in the middle, with a large number of modest changes."
8. Ryu (2011b) offers a thorough treatment of this issue by fitting different distributional assumptions of major policy process theories into a series of equations, which explain with great clarity that the incremental model does not necessarily approximate a normal distribution, but rather resembles a leptokurtic distribution.

9. Following Breunig and Koski (2006), we use a nonparametric approach to generate the optimal number and size of bins, since methods that assume normality are (obviously) inappropriate (Sheather & Jones, 1991).
10. No mayor in council–manager cities has budget authority within our sample.
11. Alternatively, some may argue that managers are likely to protect agency programs from being eliminated, thus making negative punctuations less likely. While this is potentially one of several plausible explanations for managerial influence on reducing negative punctuations, it is important to note that our research offers empirical evidence for several different models; the dampening effects of managerial autonomy are observed in both positive and negative punctuations and also across different government platforms. Especially with policy autonomy, which directly captures managerial authority over budget preparation, we find managerial effects to be statistically and economically significant on both types of punctuations. This suggests that managerial autonomy has important implications for suppressing punctuations regardless of change directions and government platforms, for which we offered an explanation based on the theory of bureaucratic rationality.
12. Because some of the items used for our FA are also the characteristics of the executive budgeting system (e.g., mayor prepares the budget, or CAO prepares the budget), some may attribute the dampening effects we observe here to the centralized budget coordination of the executive budgeting system. However, as the Appendix tables for factor items clearly present, the administrative and policy autonomy factors capture the relationship between agents and principals (i.e., city manager–council relationship in the case of council–manager cities and CAO–mayor relationship in the case of mayor–council cities). Thus, the higher the factor scores are, the higher the degree of managerial autonomy is (and the lower the degree of principal's authority). Regression results of mayor–council cities show an association between managerial autonomy and decreased punctuated outputs, which, in turn, indicates mayoral authority is causally related to increased punctuated outputs. We further verify the association using an observed variable from charter information rather than a factor (a binary variable indicating if a mayor prepares the budget), and the significant association between mayoral budget authority and increased punctuation was still retained. If the significance was driven by centralized budgeting, the mayoral authority would also lead to decreased punctuations, which was not the case in our analysis. Thus, centralized budget coordination was ruled out as a potential factor.

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APPENDIX

Table A1. Six Core Budget Functions for Michigan Cities

Community and economic development	Includes expenditures for the functions of redevelopment and public housing, community planning and zoning, economic development, and all other development activities
General government	Includes all expenditures for the functions of the legislative and judicial bodies, chief executive, treasurer, assessing equalization, clerk, elections, finance and tax administration, building and grounds, and all other general government revenue
Health and welfare	Includes expenditures for the functions of health departments, boards and clinics, alcoholism and substance abuse, hospitals, medical examiner, mental health, emergency services, childcare activities/human services, human services and medical care facilities, area agency on aging, veterans' programs, and all other health and welfare expenditures
Public safety	Includes expenditures for the functions of police/sheriff, fire, combined public safety departments, emergency 911 dispatch activities, corrections/jails, building inspection and regulation activities, and all other public safety activities
Public works	Includes all expenditures for the functions of public works and infrastructure, road commission/street department, sanitation/landfill/solid waste, water and/or sewer systems, electric utilities, airports, public transportation, water, and all other public works enterprise activities
Recreation and culture	Includes expenditures for the function of parks and recreation, libraries, and various cultural activities, fine arts, historical societies, museums, etc.

Table A2. Obliquely Rotated Factor Loadings and Uniqueness for 10 Managerial Institutional Variables (Council–Manager Form)

	Factor 1	Factor 2	Uniqueness
Manager administrative autonomy			
Manager appoints clerks	0.95	0.07	0.09
Manager appoints treasurer	0.96	0.14	0.06
Manager appoints department heads	0.55	0.59	0.34
Manager appoints assessor	0.94	0.09	0.11
Council appoints clerks	−0.90	0.21	0.13
Council appoints treasurer	−0.97	0.13	0.04
Council appoints department heads	−0.71	−0.47	0.27
Council appoints assessor	−0.95	0.01	0.10
Manager policy autonomy			
Manager prepares the budget	0.10	0.86	0.24
Council prepares the budget	−0.01	−0.97	0.05

Table A3. Managerial Autonomy in Council–Manager Government

	Average Factor Score	Minimum Factor Score	Maximum Factor Score
Administrative autonomy (N = 7,560)	0.22	−0.56	0.66
Policy autonomy (N = 7,560)	−0.58	−1.06	0.29

Table A4. Obliquely Rotated Factor Loadings and Uniqueness for 10 Managerial Institutional Variables (Mayor–Council Form)

	Factor 1	Factor 2	Uniqueness
Manager administrative authority			
CAO appoints clerks	0.97	0.11	0.04
CAO appoints treasurer	0.97	0.11	0.04
CAO appoints department heads	0.81	0.24	0.29
CAO appoints assessor	0.97	0.11	0.04
Mayor appoints clerks	−0.93	−0.30	0.05
Mayor appoints treasurer	−0.94	−0.13	0.10
Mayor appoints department heads	−0.93	−0.17	0.09
Mayor appoints assessor	−0.75	−0.10	0.43
Manager policy authority			
CAO prepares the budget	0.22	0.92	0.11
Mayor prepares the budget	−0.23	−0.86	0.22

Table A5. Managerial Autonomy in Council–Manager Government

	Average Factor Score	Minimum Factor Score	Maximum Factor Score
Administrative autonomy (N = 3,402)	−0.31	−1.08	0.25
Policy autonomy (N = 3,402)	0.01	−0.52	0.84