Inertia and Public Bureaucracy: The Imprint of the Bureaucrat

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Abstract: This paper aims at a fresh view on the role of bureaucracy as a key player in budgetary processes. We show that organizational and institutional constraints embedded in initial policy choices fundamentally alter subsequent policy choices of bureaucrats. In particular, we develop a theoretical framework that synthesizes insights from the theory of organizational imprinting with the opportunistic budget-maximization behavior of bureaucrats. It becomes apparent that budget-maximization strategies are nested in early imprints of bureaucracy. Imprints of the past define the arena in which budget-maximization takes place, and they have a decisive effect on the individual behavior of bureaucrats. As a result policy reforms towards better bureaucratic control must distinguish between measures targeted at the opportunistic behavior of bureaucrats on the one hand and the imprinted bureaucratic environment on the other hand.

1. Introduction

A growing body of literature in sociology, political science and economics is concerned with the decisive role of bureaucrats in public policy outcomes[1]. Starting with the seminal contribution of William Niskanen about the interaction between bureaucracy and legislation in the budgetary process in the late 1960s[2], the subsequent literature has focused on the more general question of policy delegation[3] and the political control of bureaucracy.[4] The core insight of these studies is that bureaucracy can indeed influence the budgetary choices of the legislator and that the bureaucrat can to a large degree live out his own policy preferences, with possibly detrimental consequences for the welfare of society.[5] However, the models employed are silent about the impact of the historical, institutional and organizational context on the emergence of the public policy preferences of bureaucrats. In this paper we stress the role of history, institutions and organization as important dimensions for a comprehensive understanding of bureaucratic behavior.[6]

We argue that it is worthwhile to consider two originally different streams of literature to obtain a richer and more nuanced picture of bureaucratic behavior. First, the theory of organizational imprinting postulates that history matters for shaping organizational

[1] See Bendor 1988, Gill 1995 and Gailmard and Patty 2012 for surveys of this literature.

[2] Niskanen 1968; 1975.

[3] Epstein and O'Halloran 1999; Huber and Shipan 2002.

[4] McCubbins, Noll, and Weingast 1987; Huber, Shipan and Pfahler 2001; Shipan 2004.

[5] Aberbach and Rockman 2000; Gailmard and Patty 2012.

[6] Friedland and Alford 1991; Powell 1991; Kelman and Hong 2014.

strategies and policies and, moreover, it posits that initial conditions can trigger organizational rigidity and inertia.[7] In particular, the theory explains how policy rigidity may arise due to bureaucrats' own policy predilections driven by their initial choices and economic or psychological switching costs.[8] Second, public choice theory in the tradition of Niskanen[9] posits that self-interested and powerful bureaucrats have a preference for higher budgets and use their power to maximize their budget, resulting in outcomes that are sub-optimal from a social point of view. However, public choice models typically take a very narrow view of the formation of bureaucratic preferences over public policies and ignore the possibility of inertia.[10]

This paper synthesizes insights from these two different strands of literature in a unified framework and examines the question of how bureaucratic inertia plays out in choices on public policies, focusing in particular on the economic efficiency of public policy outcomes. In particular, we elaborate on a framework that integrates the rational choice approach of a budget maximizing bureaucrat with organizational imprinting. The proposed framework shows how initial conditions of bureaucratic organization have a lasting impact on the self-interested decision making of bureaucrats.

[7] Inertia is defined as the persistent resistance to change of individuals and organizations, if the environmental conditions change (Hannan and Freeman 1984).

[8] Staw 1976; Powell 1991; Perkmann and Spicer 2014.

[9] Niskanen 1968.

[10] Bendor 1988.

Our work differs from earlier works on bureaucratic decision making, where the agency structure,[11] the agency's organizational mission,[12] and the functional activities of an agency based on its production processes and outcomes have been center stage.[13] These studies do not provide historically and institutionally embedded explanations for bureaucratic preferences towards public policies, thus ignoring the underlying processes that give rise to inertia. The theory of organizational imprinting addresses this gap and provides an understanding of the factors affecting the context of bureaucratic decision making.

The rest of the paper is structured as follows. Section 2 provides a brief review of the literature about the role of bureaucracy in public policy formulation in the tradition of the Niskanen framework. Section 3 spells out the key elements of organizational imprinting and how the historical and institutional context can shape bureaucratic preferences over public policies. Section 4 then develops a theoretical framework to explore the impact of bureaucratic inertia on the efficiency of public policies. Section 5 summarizes the key findings and concludes the discussion.

2. Behavior and Public Policy in Standard Models of Bureaucracy

The literature on public bureaucracy embraces a wide spectrum of disciplines as public administration, organization theory, political science, sociology and economics. Whereas public administration and organization theory emphasize institutional design, staff

11 Moe 1989.

12 Wilson 1989; Carpenter and Krause 2011.

13 Wilson 1989.

relationships, hierarchical structures, and organizational procedures,[14] political science concentrates on questions of political control of bureaucracies and the conjunctions between legislation and bureaucracy.[15] Thereby most of the studies from public administration, organization theory or political science lack rigorous conceptual frameworks and the focus lies mainly on the categorization and delineation of problems rather than providing a coherent theoretical frame for understanding the role of bureaucracy for shaping public policy.[16]

The literature on public bureaucracy in the field of economics adopts a more rigorous approach for the study of bureaucratic behavior by emphasizing the rational actor model. But as a result those models are quite often very narrow, dismissing large parts of the situational context and organizational dynamics. Nevertheless, for our purposes it is reasonable to start our analysis with the basic models of bureaucracy from rational choice and then to mark step-by-step the attempts to fill pivotal research gaps.

Most of the rational choice literature in political science and economics focuses on policy delegation and the political control of bureaucracy. Studies on policy delegation typically use models in which principals delegate policies to agents. Politicians tend to delegate policies to those agents whose policy preferences are closest to their own preferences – the so-called 'ally principle'.[17] However, it is argued that the ally-principle does not always hold. For instance, if the policy implementation by the bureaucrats

14 Wilson 1989; Simon 1997.

15 McCubbins, Noll, and Weingast 1987; Moe 1995.

16 Moe 1995.

17 Bendor et. al. 2001; Gailmard 2002; Bendor and Meirowitz 2004;Huber and McCarty 2004.

becomes influenced by interest groups, politicians may be inclined to delegate policies to bureaucrats whose preferences diverge from their own preferences but who work effectively against the influence of interest groups.[18] In a recent contribution Warren[19] shows that the ally principle may also be violated in a situation where the internal dynamics of the legislature may lead to a delegation of policies to non-allied bureaucrats in order to preclude any particular branch of the legislature from directly controlling the bureaucracy.[20]

More recent research in the field of bureaucracy has emphasized the notion of transactional authority that encompasses both formal and informal arrangements for the delegation of policy-making powers as well as ensuring agency compliance.[21] It is argued that the traditional concept of authority in bureaucratic politics that is rooted in the formal authority of the principal is incomplete in view of its exclusive focus on formal institutional mechanisms. Such mechanisms ignore the agency's power to shape the terms of the contract with the principal through lobbying or direct involvement in drafting legislation. The concept of transactional authority, which is based on bargaining and mutual exchange between the agency and the principal, can be helpful in better understanding bureaucratic politics in the area of public policy delegation.

18 Bertelli and Feldman 2007.

19 Warren 2012.

20 Other studies on policy delegation explore how delegation of policy-making power creates incentives for bureaucrats to enhance their professional expertise. See, for example, Aghion and Tirole 1997; Bawn 1995; and Bendor and Meirowitz 2004.

21 Carpenter and Krause 2015.

Other models of bureaucracy trace their origins to Niskanen's seminal work which provides a formal model of bureaucracy to explore the interaction of legislation and bureaucracy in determining budgetary allocations.[22] In this framework the bureaucracy knows the legislators' demand function for public services and exploits its monopoly power to extract the maximum budget from the legislator. In particular, the bureaucracy is assumed to offer take-it-or-leave-it proposals to the legislator, which binds the latter to a choice between accepting the bureaucracy's preferred level of output or obtaining no output at all. Since the legislators are willing to pay as long as the marginal benefit of a bureau's output is positive, the monopolistic bureau produces past the point where marginal costs are equal to marginal benefits. As a result, the bureau's output and budget exceed the socially optimal level leading to economic inefficiency.

Several studies have extended Niskanen's budget maximization framework to incorporate more nuanced approaches for modeling budgetary allocations,[23] emphasizing in particular the discretionary powers of bureaucracy. Most notably, in a major departure from most of the earlier studies that consider budget maximizing bureaus producing a single output, Mackay and Weaver[24] develop a model of a multi-activity agenda setting

22 Niskanen 1968.

23 See, for example, Breton and Wintrobe 1975; Romer and Rosenthal 1978; Mackay and Weaver 1981; Miller and Moe 1983; Conybeare 1984; Bendor, Taylor, and Van Gaalen 1985; and Bendor and Moe 1985; 1986.

24 Mackay and Weaver 1983.

bureau.[25] The citizen-voter sets the budget to maximize its utility while the bureau controls the budgetary mix. The control over the budgetary mix gives a bureau effective control over the desired budget of the citizen-voter, and hence the bureau gets power to manipulate the budgetary outlays.[26] As a result, while there may be efficiency gains (economies of scale) from having a single bureau that produces a variety of outputs, these gains need to be weighed against potential losses resulting from the monopoly power of the bureau.

The role of interest groups in public spending has been highlighted by Bendor and Moe who develop a framework in which interest groups interact with the legislator and bureaucrats to determine budgetary outlays in a setting that incorporates adaptive rather than optimizing behavior.[27] The bureaucratic agency is concerned with its budget, the legislator is interested in re-election, and different interest groups may either benefit or lose from the output of bureaucracy. Interest groups play a critical role in driving agency relationships by influencing the legislator through their votes, with the latter affecting the bureaucracy through budgetary allocations and oversight mechanisms. The equilibrium configuration in this set up is generally not socially optimal and is characterized by a too low level of public services that benefits corporations over consumers because of the relative strength of the former in influencing public policy.

25 For example, a municipal corporation provides multiple services including police, fire, and sanitation services.

26 For instance, a school board may strategically alter the budgetary allocation between "academics" and "athletics" so as to induce voters to support an increase in the school budget.

27 Bendor and Moe 1985.

To sum up, the literature about the role of bureaucracy in public policy covers a wide spectrum of issues ranging from agenda control powers to the design of oversight mechanisms and from budgetary allocations to the efficiency of the bureaucracy. The literature has greatly enhanced the understanding of the bureaucracy's peculiar role for public policy and budget spending. However, despite the richness and breadth of these studies, some important gaps remain. For example, while the studies highlight the interaction between the legislator and the bureaucracy for the determination of public policies, questions such as the distribution of power within the bureaucracy and its implications for the choice and implementation of public policies have received less attention. Also, most of the literature ignores the institutional environment, which shapes the incentives and constraints faced by bureaucrats. Specifically, little attention has been paid in the literature to explore how bureaucratic preferences over public policies are determined by the historical and institutional context and how such policies may persist through forces of institutionalization and inertia.

3. Bureaucratic Policy Preferences and Inertia: Insights from the Theory of Organizational Imprinting

The theory of organizational imprinting has received a great deal of attention in organizational research.[28] The theory provides a conceptual framework for understanding not only the genesis of organizational forms and strategies but it also gives an explanation of why organizations exhibit inertial tendencies in their policies and strategies. There are

28 For an overview see Marquis and Tilcsik 2013; Simsek, Fox and Heavey 2015.

two features, which mark this theory.[29] First, it refers to the process through which economic, social and institutional factors shape or imprint organizational forms. The second feature embodied in the idea of imprinting is the tendency of various organizational structures and processes to persist over time.[30]

The insights from the theory of organizational imprinting shed light on how the external environment (including economic, social and political institutions) shapes a bureaucracy's organizational form, policies and routines at both macro and micro levels. At the macro level it is argued that organizations exhibit a tendency to become 'isomorphic' with the external environment to avoid uncertainty and to gain legitimacy. Reflecting further on this theme, Carroll and Hannan argue that the viability of particular organizational forms is dictated by the broader social and institutional context, which is 'mapped' onto the organization leaving a lasting imprint on key organizational features.[31] Besides influencing the type of organization and its form at the macro level, the external environment can also have deep influence on various micro level characteristics of an organization including management practices, policy orientation, intra-organizational distribution of power, and other social attributes such as work ethics, and organizational norms and values. Similarly, while the individual organizational actors can themselves be imprinted in terms of their work habits, beliefs, and preferences, they can also be a source of imprints on organizational building blocks as well as on other individuals. For example, individuals, particularly the first incumbents of an organization, may imprint a specific

29 Johnson 2007.

30 Hannan and Freeman 1984; DiMaggio and Powell 1991; Baron, Hannan and Burton 1999.

31 Carroll and Hannan 2004.

organizational power structure because of their social and educational background, experience and skills, leaving a defining stamp that will continue to shape the behavior of future entrants of the organization.[32]

Hannan and Freeman argue that once organizations adopt specific forms, strategies and practices, it is difficult and costly to dismantle these due to the irreversibility of investments.[33] More specifically, the persistence of various organizational features can be attributed to three powerful and complementary forces. First, forces of inertia play a major role for the persistence of organizational features and strategies. Second, institutionalization of norms, beliefs and practices contributes to the persistence and reproduction of organizational attributes. Third, vested interests may perpetuate the existing organizational structures and policies.

A multi-disciplinary literature under the rubric of 'new institutionalism in organizational analysis' draws on economic, social and cultural explanations for institutionalization and hence persistence of various organizational strategies and policies. Meyer and Rowan delineate the institutionalization processes through which organizational traits and behaviors acquire a rule-like status and become embedded in social thought and action.[34] Organizations tend to incorporate these institutionalized rules into their structures, in order to acquire resources and secure legitimacy, which raise the survival chances of the organization. Consequently, Jepperson conceives the process of

32 Burton and Beckman 2007.

33 Hannan and Freeman 1984.

34 Meyer and Rowan 1991.

institutionalization as a social pattern that aims at reproduction and retention.[35] Seen in this light, institutions reproduce themselves not primarily by success in the market but by 'self-activating social processes' that contribute to the persistence of organizational characteristics. Powell takes a broader view of institutional reproduction and highlights four avenues of institutional reproduction including the exercise of power, complex inter-dependencies, taken-for-granted assumptions, and path-dependent development processes.[36] Organizational characteristics may persist through the active efforts of individuals who have the power to control organizational processes and who have an interest in maintaining the system. Organizational routines and processes may also persist due to organizational inter-dependencies that create complex linkages making it difficult to change one aspect without disturbing the whole "reaction chain". Similarly, organizational routines can persist as taken-for-granted rules which become accepted practice. Finally institutional arrangements may become persistent due to path-dependence that makes such arrangements increasingly viable due to increasing returns and positive feedback mechanisms.

The foregoing insights suggest that the policy preferences of bureaucracy can be shaped by economic, social and institutional context factors that define the operational scope, policies and capabilities of bureaucratic organization.[37] As a result, if a bureaucratic organization strives to achieve a fit with its external environment, it acquires specific attributes that range from organizational hardware such as technological apparatus and

35 Jepperson 1991.

36 Powell 1991.

37 Marquis and Tilcsik 2013.

human resources to the software of organizations such as attitudes, habits and beliefs. With the passage of time, such organizational characteristics become embedded in the organizational culture and tend to persist because of forces of institutionalization and inertia. For example, once a particular policy or strategy becomes a shared norm in a bureaucracy, it has the tendency to become an institutionalized act or what Zucker[38] refers to as "socially constructed reality" which is resistant to change because it is viewed as an objective and external fact[39] assuming a taken-for-granted character.[40]

In the following we will link the theory of imprinting with a choice model. Thereby we employ the choice model as a vehicle to rigorously explicate the concept of organizational imprinting. As a result it is possible to connect the (descriptive) concept of organizational imprinting with a (normative) welfare analysis.

4. A Formal Analysis of Imprinting and Budget Maximization

In order to formalize how the notion of organizational imprinting can lead to inertia and how this impacts on the behavior of bureaucrats we build our analysis on a choice

[38] Zucker 1991.

39 According to Zucker 1991 "acts are objective when they are potentially repeatable by other actors without changing the common understanding of the act, while acts are exterior when subjective understanding of the acts is reconstructed as inter-subjective understanding so that the acts are seen as part of the external world."

40 See also Berger and Luckmann 1967.

framework proposed by Masatlioglu and Ok.[41] This framework allows us to study bureaucratic inertia more rigorously and in more detail.

To begin with, let H be a set of finite states of the world. For simplicity, we assume that there are only two states of the world, the initial state h_0 and the current state h_1.

$$H = \{h_0, h_1\} \quad (1)$$

A given state of the world captures the economic, social and institutional environment which determines the set of policies or strategies feasible in that state of the world. With reference to the theory of organizational imprinting, this is consistent with the notion that organizational strategies depend on context factors of the institutional environment. The dependence of the feasible set on the state of the world is captured by the following correspondence:

$$\varphi: H \to T \quad (2)$$

Where T is a compact metric space. Let $K \in T$ be the feasible set in the initial state of the world, i.e. $K = \varphi(h_0)$. Also let $X \in T$ be the feasible set in the current state of the world, i.e. $X = \varphi(h_1)$. It is assumed that both K and X are compact sets.

Consider first the individual choice problem of a bureaucrat in the initial state of the world. It is assumed that in the initial state, individual choice is constrained only by the feasible set corresponding to the initial state of the world. This set-up is in line with the theory of organizational imprinting, which postulates that organizational actors are

[41] Masatlioglu and Ok 2014.

particularly malleable and open to adopting strategies that are in consonance with the institutional environment in the initial state. Thus, in the initial state the bureaucrat chooses a strategy $k_0 \in K$ which is maximal in the feasible set, i.e.

$$U(k_0) \geq U(k) \text{ for all } k \in K \qquad (3)$$

According to organizational imprinting, $k_0 \in K$ can be thought of as a viable strategy dictated by the institutional environment in the initial state of the world. Once the initial environment has imprinted a strategy it tends to persist due to the forces of institutionalization and inertia. In other words, even when the institutional environment changes (the current state of the world), the initial choice of strategy may still be a preferred option. Also, the initial choice may alter the feasible choices in the current state of the world, consistent with the notion of path dependence, which underscores the fact that initial choices may restrict future options.[42]

These ideas can be formalized in terms of the choice framework as follows. Consider the set of feasible choices in the current state of the world X. Since maintaining the status quo or keeping the default position is always an option, it is assumed that $k_0 \in X$. A bureaucrat whose initial choice is k_0 maximizes his utility subject to a constraint imposed by his initial selection. One may think of the constraint as an individual psychological barrier,[43] a cognitive routine shared in a group[44] or as an institutional logic that governs the

42 Arthur 1989; Powell 1991.

43 Masatlioglu and Ok 2014.

44 Nelson and Winter 1982.

behavior of whole populations in a field.[45] Thus, if the individual chooses $x \in X$ when his feasible set in the current state of the world is conditioned by his initial choice, this implies that "x is appealing from the perspective of k_0", i.e.

$U(x) \geq U(y)$ for every $y \in X$ that is appealing from the perspective of k_0.

The basic idea here is that the initial choice k_0 limits the individual choices in the current state of the world. For example, once an initial choice is made, it can define an institutional logic or a 'mission' that shapes future choices. In the extreme case that the individual choice in the current state is limited to only k_0 the initial policies and strategies will persist unchanged. More importantly, it may also be possible that the presence of the default option imposes a constraint that eliminates some choices that may be strictly better than the default option. This is consistent with insights from organizational imprinting and path dependent processes which highlight the fact that organizational actors may choose sub-optimal policies or strategies because of inertia resulting from economic and psychological switching costs.[46]

These ideas can be made more precise in terms of the choice framework developed by Masatlioglu and Ok.[47] In particular, they derive a utility function and a choice set that is constrained by the initial choice of the individual. Let Δ denote an object that does not belong to X. The symbol σ denotes a member of the set $X \cup \{\Delta\}$. Let Ω_X be the set of all

45 Thornton and Ocasio 2008.

46 See, for example, Arthur 1989; Staw 1976.

47 Masatlioglu and Ok 2014; 2005.

non-empty closed subsets of X. The choice problem is a list (S, σ) where $S \in \Omega_X$ and either $\sigma \in S$ or $\sigma = \Delta$. The set of all choice problems is denoted by $C(X)$.

The choice problem without an initial reference point or status quo option is a list (S, Δ) for any $S \in \Omega_X$. On the other hand, given any $k_0 \in X$ and $S \in \Omega_X$ with $k_0 \in S$, the choice problem (S, k_0) is called a choice problem with a status quo or initial endowment or default option. The set of all such problems is denoted as $C_{sq}(X)$, which summarizes the choices faced by a decision maker who is currently endowed with or has a default option k_0. It can be shown that if the choice correspondence $C(X)$ satisfies the specified axioms, then there exists a continuous utility function $U: X \to \mathbb{R}$ and a close-valued self-correspondence Q on X such that[48]:

$$c(S, \Delta) = \arg\max\ U(S) \qquad (4)$$

$$c(S, k_0) = \arg\max\ U(S \cap Q(k_0)) \text{ for every } (S, k_0) \in C_{sq}(\mathrm{X}) \qquad (5)$$

Equations (4) and (5) summarize the choice model which can now be used for understanding the choices of bureaucrats with or without an initial reference point or status quo option. Suppose that (4) and (5) hold for any choice problem $(S, \sigma) \in C(X)$. A bureaucrat without an initial reference point simply maximizes his utility in the feasible set as indicated in equation (4). More specifically, his choice solves the following maximization problem:

$$\text{Max } U(\omega) \text{ subject to } \omega \in S \qquad (6)$$

[48] *Ibid* 2014.

In the presence of an initial reference point or status quo option (S, k_0), the individual uses a psychological constraint set $Q(k_0)$ to eliminate all feasible alternatives that do not belong to this constraint set, i.e. the agent identifies the set $S \cap Q(k_0)$. This set consists of all feasible options that are superior to the initial reference point of the decision maker, i.e. if $k \in Q(k_0)$, then his initial reference point would not preclude a switch from k_0 to k. Clearly, if $k \in S \cap Q(k_0)$, then k satisfies both the feasibility constraint (S) as well as the psychological constraint induced by the initial choice of the agent ($Q(k_0)$).

Once the set $S \cap Q(k_0)$ is determined, the agent simply maximizes his utility among alternatives that satisfy both the feasibility and psychological constraints. In the extreme case, if k_0 is the only element in both $Q(k_0)$ and S, the bureaucrat stays with his initial choice. On the other hand, if there are other alternatives in $S \cap Q(k_0)$ then his choice is determined by solving the following problem:

$$\text{Max } U(\omega) \text{ subject to } \omega \in S \cap Q(k_0) \qquad (7)$$

It is important to remember that there may be feasible alternatives outside the set $Q(k_0)$ that may provide a strictly higher utility than k_0. This is because these elements are omitted by the psychological constraint induced by the initial choice k_0 (the imprint). Consequently, there may be alternatives that are superior to k_0 but are not chosen when k_0 was selected in the initial state. This accords with organizational research, which posits that initial choices may preclude future options including those that are superior to the initial choice.[49]

[49] Powell 1991; Sarah and Henderson 2005.

In a next step the framework can be employed to explore how bureaucratic policy choices that are driven by the historical and institutional context can impact economic efficiency and social welfare. To that end we focus on the role of bureaucrats in the budgetary process along the lines of Niskanen, and Mackay and Weaver[50] and combine it with our framework. In particular, we consider a setting in which a representative bureaucrat controls the budgetary allocation policy while the overall budget is set by a representative citizen-voter.[51] Assume that there are two publicly provided goods and services B_1 and B_2. With their prices normalized at unity, B_1 and B_2 represent the expenditure (budget). Let B denote the total budget and let $k \in [0,1]$ be the share of the total budget for B_1, and $(1-k)$ be the share of the total expenditure for B_2.

Then:

$$B_1 = kB; \text{ and } B_2 = (1-k)B \qquad (8)$$

The representative bureaucrat controls the budgetary allocation policy k and hence his feasible set is $K = [0,1]$. It is assumed that in both states of the world, the bureaucrat chooses a budgetary allocation from this feasible set, i.e.

$$\varphi: H \to [0,1] \qquad (9)$$

In the initial state the bureaucrat's choice is free from any reference dependence or imprinting. Hence in the initial state the bureaucrat's choice is maximizing his utility

50 Niskanen 1968; Mackay and Weaver 1983.

51 Epstein and O'Halloran 1994; Volden 2002.

according to (3) and he chooses a budgetary allocation policy $k_0 \in K$ that is maximal in the feasible set.

In the current state of the world, the bureaucrat's choice of budgetary allocation policy and the total budget is determined as follows. Consider a representative citizen-voter whose utility $\phi(.)$ is defined by private consumption (C) and two publicly provided services (B_1 and B_2). The citizen-voter receives an income (Y) and pays a lump sum tax (T) which finances the provision of public goods and services by the bureaucrat. The citizen-voter's optimization problem is thus:

$$\max \phi = \phi(C, B_1, B_2) \quad (10)$$

Subject to:

$$Y = C + T \quad (11)$$

$$T = B_1 + B_2 = B \quad (12)$$

Plugging (11) and (12) in (10) and using (8), the derived utility function of the citizen-voter can be specified as a function of the budgetary allocation policy (k) and the size of the budget (B):

$$U(k, B) = \phi(Y - B,\ kB,\ (1 - k)B) \quad (13)$$

The optimization problem of the representative citizen-voter is thus to choose the size of the budget B to maximize his utility given income (Y) and the budgetary allocation (k):

$$\max_B U(k, B) = \phi(Y - B, kB, (1 - k)B) \quad (14)$$

The optimal budget level for the citizen-voter, given the budgetary allocation (k), can be defined as:

$$B(k) = \arg.\max_B U(k, B) \qquad (15)$$

To work out the closed form solutions while keeping the analysis tractable, it is assumed that the utility function of the citizen-voter is quasi-linear in private consumption and additively separable in the two types of public goods and services. Specifically:

$$U(k, B) = Y - B + (kB)^{\frac{1}{2}} + \big((1-k)B\big)^{\frac{1}{2}} \qquad (16)$$

The bureaucrat's choice in the current state is conditioned by his initial choice of the budgetary mix according to k_0. As argued in the previous section, once a particular strategy is chosen, it tends to become entrenched and resists change due to the phenomenon of imprinting. It is thus assumed that a bureaucrat faces economic and psychological costs of switching his strategy resulting in disutility for the case of deviation from his default option. On the other hand, a bureaucrat may benefit from a change of his budgetary allocation mix, if larger budgetary resources accompany it. Thus the utility function of the representative bureaucrat can be defined as:

$$V(k) = \alpha(B(k)) - \gamma(k - k_0)^2 \qquad (17)$$

The first term on the right hand side captures the utility derived from the budget while the second term is the disutility that results from changing the initial strategy. The parameters $\alpha > 0$ and $\gamma > 0$ capture the relative importance of the budget and the initial budgetary mix policy with regard to the optimization problem of the bureaucrat,[52] where γ

[52] $\alpha > 0$ is consistent with the assumption that $V(k)$ is increasing in the level of budget. If $\alpha = 1$ and $\gamma = 0$, then the problem reduces to simple budget maximization by the bureaucrat. In this case, the model

is a measure for the level of bureaucratic inertia indicating the degree of bureaucratic resistance to change the initial strategy.

Given his initial strategy the bureaucrat's feasible set in the current state of the world can be defined as follows:

$$Q(k_0) = \{k \in K : V(k) \geq V(k_0) = \alpha(B(k_0))\} \qquad (18)$$

This set identifies all the budgetary mix policies in the feasible set that are better than the initial strategy k_0. Therefore the bureaucrat's optimal choice of the budgetary mix in the current state is simply:

$$k = \arg.\max_k V(k) \text{ for every } k \in Q(k_0) \subset K \qquad (19)$$

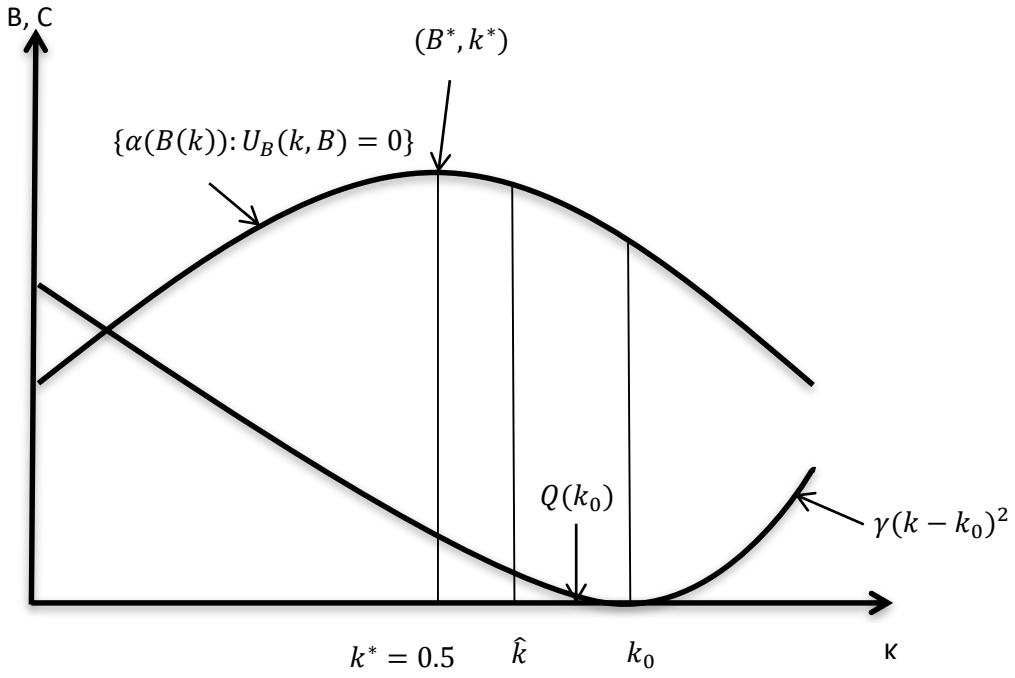
It can be seen from equations (17) and (18) that the feasible set depends on the optimal budget levels chosen by the citizen-voter as well as the parameters α and γ. To identify this set, the model is solved to derive the optimum values of the size of budget and the budgetary mix policy (B^*, k^*) based on first order conditions pertaining to (15) and (19) (see the appendix for a detailed solution). The solution can be depicted in Figure 1[53] for the case when $k_0 > k^*$.[54]

features the budget maximizing strategy outlined by Niskanen 1968, 1975; Romer and Rosenthal 1978; Denzau and Mackay 1976, 1980; and Mackay and Weaver 1983.

53 The curves in the diagram are drawn for $\alpha = 1$ and $\gamma = 1$.

54 An analogous reasoning can be developed for the case when $k_0 < k^*$. Additionally, if k_0 happens to equal k^* then the set $Q(k_0)$ is singleton and the bureaucrat's only choice is k_0.

Figure: 1



The curve $\{\alpha(B(k)): U_B(k, B) = 0\}$ plots the first order condition of utility maximization by the citizen-voter (see equation A3). The socially optimal budget level and budgetary mix policy (B^*, k^*) solves the optimization problem of the citizen-voter (see the appendix for details). Notice that k^* is also the budget maximizing level of the bureaucrat in the absence of bureaucratic inertia (see equation A6). However, when the bureaucrat's behavior is constrained by his initial choice, the choice of the budgetary allocation policy will be $\hat{k}$, which maximizes his utility (the distance between the two curves) and at which point the slopes of the two curves are equalized indicating that the marginal benefit of a policy change is equal to marginal cost. The feasible set induced by the psychological constraint of bureaucrats can be identified as:

$$Q(k_0) = \{k \in K: \hat{k} \leq k \leq k_0\} \qquad (20)$$

This set demonstrates how institutional and psychological constraints compel bureaucrats to eliminate alternative policies that may be superior to their initial choice in the absence of inertia. It can be seen from the diagram that there are feasible alternatives to the left of $\hat{k}$ that will provide higher budgetary resources to the bureaucrat. However, these options are excluded from the feasible set that has imprinted the initial policy choice as a reference point or initial endowment. In the extreme case, if γ is very large[55] then $Q(k_0) = \{k_0\}$ implies that the initial policy choice is the only feasible option. This situation can happen if the marginal cost of switching the policy exceeds the marginal benefit and the initial policy choice becomes locked-in. The term $\alpha(B(k))$ acts what Masatlioglu and Ok (2005) refer to as a "utility pump" which can induce the bureaucrat to deviate from his initial policy option. However, if γ is very large then this "utility pump" is not sufficient to trigger a policy shift and the bureaucrat is better off at his initial policy option k_0 with a maximum utility $V(k) = \alpha(B(k_0))$. Thus it becomes clear that the presence of inertia alters the optimizing choices of the bureaucrat in a significant way. The following proposition summarizes this finding.

Proposition 1*: The presence of inertia induces bureaucrats to make non-optimal choices despite the availability of superior alternatives in the choice-set. Moreover, the choice of sub-optimal strategies emerges as a rational response to institutional and psychological constraints imposed by imprinting.*

This result demonstrates how initial imprints contribute to a lock-in of strategies of bureaucrats. More specifically, the repetitive choice of $\hat{k}$ is optimal from the bureaucrat's

[55] The curve plotting $\gamma(k - k_0)^2$ becomes steeper and the feasible set gets narrower with an increase in γ.

point of view in the presence of inertia. However, this choice is sub-optimal in the sense that a higher level of budget could have been achieved in the absence of inertia. As argued in the previous section, a particular policy stance becomes a shared belief and leads individuals to consider other policy options as improper. In a similar vein, Meyer and Rowan (1991) argue that organizational policies and strategies tend to be highly institutionalized and hence are considered as legitimate regardless of their impact on outcomes. Furthermore, organizational strategies persist due to their taken-for-granted characteristics, which make the former self-sustaining.

Proposition 2*: In the case of inertia a utility maximizing bureaucrat will over (under) provide public services depending on the initially chosen budgetary mix. As a result there will be persistent social welfare losses.*

The fact that bureaucrats tend to choose sub-optimal policy mixes has social welfare implications, too. The foregoing analysis shows that psychological constraints induced by initial choices make superior policy choices at later stages infeasible. For example, if the initial choice involves more spending for one type of public service, the presence of inertia induces bureaucrats to allocate more resources to this service also in the future, even when the demand of the citizen-voter dictates less provision. Consequently, the bureaucrat's choice of the budgetary policy mix will often result in allocative inefficiency.

It can be seen from Figure 1 that $\hat{k}$ is not the optimal budget mix. The intuition of this result is simple. A bureaucrat has an incentive to change his strategy as long as the marginal utility from getting an additional unit of budget exceeds the marginal cost of a policy change. But the presence of inertia constrains the bureaucrat from achieving a budget strategy, which maximizes his utility in the choice-set.

While the result of social welfare loss through over-production of public services is in line with the budget-maximization hypothesis of Niskanen, the underlying logic here is very different. In Niskanen's model, the budget-maximizing bureaucrat has an incentive to extract the maximum budget that politicians are willing to provide, resulting in over-production of public services. In our case the welfare loss does not necessarily result from the bureaucrats' motive of over-production, but from inertia that hinders bureaucrats from adapting their individual strategies as well as from adapting to social preferences. Therefore, in our model also underproduction of public services can be a persistent phenomenon leading to social welfare losses.

Proposition 3: *The choice of a budget and policy mix without inertia can coincide with the socially optimal budget allocation* (k^*)*, if the policy preferences between the bureaucrat and the citizen-voter are aligned. However, in the presence of inertia only a socially sub-optimal allocation of the budget* $(\hat{k})$ *can be attained.*

An interesting implication of our model is that one could assume a situation without inertia, when utility maximizing bureaucrats strive for budget maximization. In those cases it is recommendable to look for governance structures and monitoring devices that bind the bureaucrat to the preferences of citizen-voters. And indeed large parts of the literature in the tradition of Niskanen are concerned with institutional designs that prevent bureaucrats from budget maximization. If we put that a step further we could imagine a world where budget-maximization is effectively prevented and the policy preferences between citizen-voters and bureaucrats are aligned. The social optimum of public services would be attained.

However, in a world of inertia the policy recommendation to look for institutions that prevent budget maximization becomes more facetted. A first issue to be taken into account is the fact that even with perfect incentive alignment between citizen-voters and bureaucrats, an over-production of public services can take place. That means institutional designs that are perfect to prevent budget-maximization behavior can be blunt to prevent over-production caused by inertia. This leads to a second issue: Taking the existence of bureaucratic inertia seriously leads to the insight that the institutional design of bureaucracies has to distinguish between two design types. One that is targeted at overcoming inertia and one that is targeted against the opportunistic behavior of bureaucrats. That brings us to a third issue, the interplay between bureaucratic inertia and the budget maximization behavior of bureaucrats. The relation between both can be antagonistic. That means while the budget maximization behavior of bureaucrats pulls the provision of public services towards over-production, bureaucratic inertia may induce under-production by restricting the bureaucrat's choice set. As a result the amount of public services actually provided can be relatively close to the preferences of the citizen-voter, although there is no incentive alignment between the bureaucrat and the citizen-voters. For that background it is important to investigate very thoroughly from which trigger an actual bureaucratic inefficiency stems. Only then can an appropriate antidote be chosen. In some (antagonistic) cases the policy recommendation might even be to make no reforms at all.

5. Summary and Conclusions

This paper has provided a fresh view on the role of bureaucracy as a key player in budgetary processes. We show that organizational and institutional constraints embedded

in initial policy choices fundamentally alter subsequent policy choices of bureaucracies. This finding is in line with research on organizational imprinting, which argues that organizational actors may be stuck with initial policy choices, which may lead to persistent inefficiencies.

To be sure, there is a significant body of literature in political science, sociology and economics that has analyzed the problem of bureaucratic drift and the challenges it poses for the political control of bureaucracy.[56] According to this literature bureaucrats are driven by their policy preferences, and in the absence of effective oversight, they tend to adopt policies that deviate from the preferences of citizens and/or politicians. While those studies have focused on the question of how to devise mechanisms to control bureaucratic drift, little attention has been given to the underlying causes of bureaucratic drift. Thus, our analysis complements the existing literature in terms of identifying inertia as a potential cause of bureaucratic drift. More specifically, imprinting of budgetary allocations takes place independently of the efficacy of any control mechanisms against budget maximization. Thus, bureaucratic drift can be triggered even in cases when there is no budget maximization (as described by Niskanen) at all. This is an important result for two reasons: First, any institutional design targeted against the over-production of public services through bureaucracy must first analyze whether it is indeed budget maximization or bureaucratic inertia which is causing the over-production. Only if it is indeed budget maximization behavior, then improved monitoring devices against the opportunism of bureaucrats can lead to welfare improvements. Second, bureaucratic inertia can run counter

[56] See, for example, McCubbins, Noll and Weingast 1987; Macey 1992; Calvert, McCubbins and Weingast 1989; and Epstein and Halloran (1994).

to budget maximization. Early imprints of bureaucracy may actually constrain profligate bureaucrats. But the opposite could also be the case. Imprints may lead to budget allocations which are persistently too low. In those cases policies against budget maximization may even have a detrimental effect on social welfare by further reducing the amount of public services supplied. As a result one has to be careful and has to look very specifically into each single case of presumably budget misallocations before steps are taken against it. While this is a rather broad policy implication, it is of high policy relevance. For example, the OECD and World Bank regularly publish reports targeting at "good governance" for public bureaucracies or state owned enterprises.[57] Identifying principles of "good governance" is a valuable goal in itself, but for the background of our study one may wonder about the effectiveness of those principles, if they have to "compete" with the imprinted policy stances of bureaucrats. In that respect our research underscores the identification of path dependence for the assessment of the performance of public administrations.[58]

[57] See, for example, OECD 2005, 2014; World Bank 2012.

58 See also Kelman and Hong 2014; O'Toole and Meier 2015.

Appendix: Mathematical Derivations

Optimization Problem of a Citizen-voter with Policy Delegation

$$\max_B U(k,B) = Y - B + (kB)^{1/2} + ((1-k)B)^{1/2} \quad \text{(A1)}$$

Let $B(k)$ be the optimal level of budget given budgetary allocation policy k. Then $B(k)$ solves the following first order condition:

$$U_B = -1 + \left(\frac{1}{2}\right).(kB)^{-\frac{1}{2}}.k + \left(\frac{1}{2}\right).\left((1-k)B\right)^{-\frac{1}{2}}.(1-k) = 0 \quad \text{(A2)}$$

Straightforward algebraic manipulation yields:

$$B(k) = \frac{1}{4} + \frac{1}{2}.(k-k^2)^{1/2} \quad \text{(A3)}$$

Optimization Problem of the Bureaucrat

The bureaucrat maximizes the following utility function:

$$\max_k V(k) = \alpha\big(B(k)\big) - \gamma(k-k_0)^2 \quad \text{(A4)}$$

The first order condition is given by:

$$V_k = \alpha.B_k(k) - 2\gamma(k-k_0) = 0 \quad \text{(A5)}$$

Notice that in the absence of inertia ($\gamma = 0$), the first order condition reduces to $B_k = 0$ which implies from (A3) that:

$$B_k = \frac{1}{4}.(k-k^2)^{-1/2}.(1-2k) = 0 \quad \text{(A6)}$$

Solving (A6) (assuming interior solution) yields the optimal value of $k^* = 1/2$ at which the bureaucrat's utility is maximized without inertia. In other words, the bureaucrat's budget is also maximized at $k^* = 1/2$ in the absence of inertia.

If inertia is present ($\gamma > 0$), then the first order condition (A5) implies that $B_k(k) > (<)0$ if $k - k_0 > (<)\ 0$. If $k_0 > k^*$ then $B_k(k) < 0$, and the optimal budgetary mix with inertia ($\hat{k}$) is greater than the optimal budgetary mix policy without inertia (k^*) (see Figure 1). If $k_0 < k^*$ then $B_k(k) > 0$ and the optimal budgetary mix policy in the presence of inertia ($\hat{k}$) is less than the optimal budgetary mix policy without inertia (k^*).

Socially Optimal Budget and Allocation Policy

The optimal size of budget and budgetary allocation policy (B^*, k^*) simultaneously maximizes the utility of the citizen-voter. That is, (B^*, k^*) solves (A2) and the following first order condition:

$$U_k = \frac{1}{2}(kB)^{-\frac{1}{2}} - \frac{1}{2}((1-k)B)^{-\frac{1}{2}} = 0 \qquad \text{(A7)}$$

Solving (A2) and (A7) gives the socially optimal $(B^*, k^*) = (0.5, 0.5)$.

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