Bureaucracy and Development*

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August 5, 2021

Abstract

In recent years, there has been increasing interest in whether and how bureaucratic effectiveness contributes to development. Just what makes for an effective bureaucracy and what are the building blocks of state capacity remain subject to debate. This paper reviews the arguments connecting contemporary research using administrative data and field experiments to wider discussions of the origins of state capacity. Most current research has been focused on understanding specific features of the environment in which bureaucrats operate. We connect this to discussions of bureaucratic systems, specifically the relationship to politics, citizens, firms and NGOs.

JEL classification: D73, H83, L51, O11, O12, D72

Keywords: Government, State Capacity, Bureaucracy, Public Administration, Regulation, Service Delivery, Economic Development, Political Economy

*Jonathan Old and Jack Thiemel provided excellent research assistance for the paper. We thank Fred Finan, Daniel Honig, Lant Pritchett, Robert Wade, and Martin Williams for helpful comments on an earlier draft.

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1 Introduction

The rise of the institutions and state capacity paradigms in economics has brought bureaucratic effectiveness to the forefront of the debate on how to foster economic growth and development. While there is little disagreement that *effective* public administration is central to economic development, debates continue to rage about what are the building blocks of an effective and competent bureaucracy. Indeed the literature on state fragility suggests that we know more about what happens when these elements are absent rather than how to reform bureaucracies in order to create more effective states. As a result there is a growing appetite for understanding *whether* and *how* bureaucratic effectiveness contributes to economic development both among academics and policy makers.

This paper explores this issue, taking stock of how far we understand the building blocks needed to strengthen the administrative capacity of the state. This is important, since a well-functioning state can play a role in encouraging growth and poverty reduction while preserving basic liberties and expanding access to public goods and services. We will review the emerging literature on bureaucracy and development while discussing where gaps in our knowledge remain. Although our main focus is on the economics literature, we link the discussion to wider historical debates and some of the discussion in other disciplines.[1]

Front and centre is the question of whether government actions promote or hinder growth and development. Robert Lucas captured the challenge in his now-famous quote:

> "Is there some action a government of India could take that would lead the Indian economy to grow like Indonesia's or Egypt's? If so, what, exactly? If not, what is it about the 'nature of India' that makes it so? The consequences for human welfare involved in questions like these are simply staggering: Once one starts to think about them, it is hard to think about anything else."
>
> – Lucas 1988.

We aim to locate the role of bureaucracy within these debates. Figure 1 provides a diagrammatic representation of a bureaucracy embedded in the wider society, encapsulating much of what we cover in the paper. As Figure 1 makes clear, how well bureaucrats dispense their duties and the degree to which bureaucratic systems serve the public interest and promote development will depend on interactions (i) between different levels of bureaucracy, (ii) between government departments, (iii) between citizens, politicians and bureaucrats and (iv) between bureaucrats and firms and NGOs. Our review will be structured along these interactions.

The value of a powerful state bureaucracy has bifurcated opinion in predictable ways. Interventionists have traditionally seen the creation of a capable and professional state as the *sine qua non* of the developmental state. They have pointed to the historical rise of great powers and their dependence on a cadre of professional bureaucrats at their core.

[1] We are not, however, attempting to provide a comprehensive coverage of work outside of economics. See Pepinsky, Pierskalla, and Sacks (2017) for a complementary exercise looking at the political science literature.

This vision of state effectiveness goes back at least to Max Weber's seminal analysis (Weber 1922). He characterized a bureaucracy in the modern sense as a formal rule-driven operation comprising professional individuals with appropriate hierarchical delivery structures. He also emphasised mission-motivation with ideal bureaucrats motivated by a sense of duty ("fealty to the purpose of the office") in exchange for security of tenure. For Weber, the bureaucracy embodied durable expertise in the implementation of public policies set against the flux of politicians who come and go.

Those who are suspicious of large states, in contrast, frequently see bureaucracy as sclerotic and an impediment to effective governance and economic development, using the term *bureaucratic* with a pejorative edge. They emphasize that bureaucracy does *not* always serve the public interest, a view that resonates with the wider public choice literature which stressed a non-benevolent role for the state. Bureaucrats are seen as being agents who connive in expropriating citizens or as putting the interests of private actors, such as industrialists, above those of the wider citizenry (Tullock 1967, Stigler 1971, Peltzman 1976, Djankov et al. 2002).[2]

The word *bureaucrat* combines the French word *bureau* meaning desk or office, with the Greek word *kratos*, rule or political power. The term refers to paid officials responsible for discharging the core functions of public administration. These could be employed directly as part of the state apparatus but the term also applies to officials in quasi-independent public organizations such as central banks. Importantly, there is a clear distinction between such state employees selected by a superior and a politician picked in an election (Alesina and Tabellini 2007). This separation of bureaucracy and politics, famously argued by Weber (1922), is more likely to lead to a professionalized bureaucracy where selection is based on competence and technical expertise and promotions are merit-based. The study of bureaucracy is often confined to senior-level bureaucrats but, given the expansion of the state to the delivery of core public services, it makes sense to include delivery professionals in health care, policing and education, often referred to as frontline providers who are also referred to as "street-level" bureaucrats.

While the term bureaucracy is also frequently applied outside of the public sector to the administrative functions that support private business, our focus here is on support for the core functions of the state. That said, there is often an overlap in the tasks performed across private and public sector. While many employees of the state *do* perform distinctive tasks, others, like office workers, IT workers, cleaners or maintenance staff who work within state bureaucracies perform tasks that are similar to their counterparts in the private sector, even if there are well-documented differences in pay and conditions. Our focus in this paper is on *those professionals in public employment who provide key inputs and decision making*

[2]Debates over whether or not bureaucrats were serving the public interest became acute during the ascendancy of communism, where Von Mises and Morris (1944) argued that bureaucracy was a threat to democracy and building an effective market economy. Indeed, they open their book as follows: "Nobody doubts that bureaucracy is thoroughly bad and that it should not exist in a perfect world." – Von Mises and Morris (1944), page 1. Although these arguments reflect debates about the effectiveness of socialism, they also serve as a criticism of swathes of the mainstream approach that looks at government through the lens of implementation theory (Maskin and Sjostrom (2002)).

that can impact on the effective delivery of the functions of the state.

The performance of bureaucracy matters when it allows the state to be more or less effective in taxing, regulating, enforcing laws, organizing and providing infrastructure, and delivering public goods and services to citizens, firms and other non-governmental organizations (NGOs). Contemporary theories of the political economy of development put state effectiveness at centre stage and have come to view the design of political institutions as a key element. This was argued forcibly, for example in Acemoglu and Robinson (2012) who emphasize constraints on power and elections leading to states that are more inclusive. Besley and Persson (2011) argue that one of the main reasons why inclusive political institutions matter is by building an environment conducive to investing in state capacities which enable the state to enforce laws, regulate economic activity and provide public goods. While institutional design and political accountability take center stage in the political economy literature, the role of the bureaucracy has received limited attention as an independent dimension of state capacity. This may be partly related to the difficulty of measuring the performance of bureaucrats.[3]

The remainder of the paper is organized as follows. In Section 2, we provide the historical backdrop and establish a few stylized facts. To set the scene, we first briefly look at the historical literature on state capacity and economic development. One of the foci within that literature is on the enormous success of countries in East Asia that have moved from being low-income to high-income countries in the decades following the second World War. We cover this historical and narrative literature in Section 2.1. Much of this literature is qualitative and thus serves mainly to identify areas of work and ideas of what bureaucratic features might be conducive to economic development. In Section 2.2 following the lead of Evans and Rauch (1999), we move beyond case studies to look at the cross-country relationship between bureaucracy and development by establishing three "Weberian Facts" on the relationship between bureaucracy and development. The first of these illustrates that bureaucratic quality across countries has been remarkably persistent, with small improvements over the last century, but barely any relative changes. In the second fact, we find that bureaucratic quality and development, as proxied by GDP per capita, are strongly correlated. The third fact illustrates how *improvements* in bureaucratic capacity are correlated with economic growth. This section, though descriptive and non-causal, sets the scene for emphasizing how important bureaucratic effectiveness might be for economic development.

Having established these broad relationships, much of the remainder of the review is then concerned with how modern economics is attempting to unpack the relationship between bureaucracy and development. Our first step is to focus on principal-agent relationships *within* the bureaucracy, as depicted by Department A in Figure 1. Contemporary studies of state effectiveness by economists have taken a granular approach trying to break down the problem of bureaucracy into its constituent parts. Tools such as randomized control trials have tried to isolate the efficacy of specific components such as the use of incentives

[3]Whereas politicians have to contest elections bureaucrats are often generalists with lifelong tenures who perform many different roles across their careers thus making it difficult to measure their performance (see Bertrand et al. 2020).

or different strategies for recruiting state personnel (see Dal Bó, Finan, and Rossi 2013, Finan, Olken, and Pande 2017). Viewed through this lens, many of the problems of poor governance can be understood as a failure to either incentivize bureaucrats or to select those who are most likely to do a good job. This literature is covered in Section 3.

Bureaucracies, however, operate within a system which implies moving from the study of the personnel economics of the state to the organizational economics of the state. Guided by Figure 1, Section 4 first discusses the importance of considering the bureaucracy itself as a system by looking at both aggregation and interactions (depicted by dotted lines in Figure 1) between different departments within a bureaucracy. We then discuss the relation between bureaucracy and politics, and argue that the nature of the political system has a strong influence on bureaucracies. In particular, (high-level) bureaucrats are typically accountable to politicians. While politicians are principals when it comes to bureaucrats, they are agents themselves when it comes to the citizens – thus also highlighting the importance of political selection and incentives. A key part of the agenda in building an effective state, then, is not only to think about how to select and motivate bureaucrats but to make politics and bureaucracy work in tandem. Finally, we discuss how bureaucracies interact with firms and NGOs, key societal and economic actors which are strongly affected by regulation, but may also exert influence on bureaucrats. This relationship between bureaucrats and the private sector is critical as it is the latter that drives economic growth and development. This section is strongly related to the literature in sociology and political science studying the *embeddedness* of the bureaucracy within the broader society (Evans 1995, Evans and Rauch 1999, Pepinsky, Pierskalla, and Sacks 2017) and also highlights the potential capture of the bureaucracy by the private sector.

As illustrated by Figure 1, the objective of this review is to move towards the study of the state as an organization. While bureaucrats play a central role, they are being influenced by a host of factors both from within and outside government. Only in this way can we begin to think about how to improve bureaucratic effectiveness at the system level. Section 5 summarizes what we have learned from the organizational economics of state and points to important areas of future research.

2 Bureaucracy and State Effectiveness

2.1 Background and history

Historians and political scientists have long recognized the role of bureaucracies in the development of nation states. Governing large territories required administrators who answered directly to a central government. The unification of countries often required that national bureaucrats took over the administration of sub-national units that had been previously run by local leaders. Modern states function by having a core of competent and motivated public servants which make government work. One of the state's primary functions was national defence to protect against aggressors (Tilly 1985). A second important function of bureaucracies beyond the power to coerce and protect was the building of infrastructure.

And both of these ambitions required building effective tax systems (Levi 1988, Migdal 1988). States increasingly built their own specialized cadre of employees to deliver these functions and the importance of effective administration in collecting tax revenue and enforcing laws became paramount. This role was emphasised further with the emergence of colonial powers that required not only the capacity to administer at home but also in the nations that they had subjugated.

In China, state centralization came with the establishment of a professional cadre of *mandarins* recruited through competitive examinations (Woodside 2006, Whyte 2009). In England, after the Glorious Revolution successive governments built a highly efficient and meritocratic excise bureaucracy to meet the needs of naval expansion (Brewer 1988). In France, bureaucracy was important in building central state capacity (Cantor 2015), with *grandes écoles* set up to funnel the most talented into the public sector. Bureaucracies have also been at the heart of many state-initiated authoritarian reforms as in Prussia in 1806-1814, Russia in the 1860s. In some cases they have instituted "Revolution from Above" in which bureaucrats, including military officials, were able to seize and reorganize state power, destroy an existing dominant class and reorient national economic development, such as Japan during the Meiji restoration.

In the English speaking world, perhaps the most fundamental milestone that pointed to the need for bureaucratic reform was the Northcote-Trevelyan report of 1854 (Northcote, Trevelyan, and Jowett 1854). This introduced three major reforms. The first was to introduce nationwide competitive exams for entry to the national civil service; the second was to ensure that promotions and advancement within the service were governed by rules that were fair and transparent; and the third was to emphasize the importance of a permanent civil recruited into a "home civil service" as a whole rather than a specific department. This would act as a backdrop against a rotating set of politicians who would come and go. The ideas of this report fundamentally influenced the organization of the state not just in the UK, but the organization of colonial administrations in a whole range of colonies in which the effects of this bureaucratic reform can still be seen today.

A parallel set of reforms were enacted in the United States around the same time, most notably the Pendleton Act of 1883 sought to restrain the spoils system in bureaucratic appointments. Although the process of ending patronage in public sector recruitment continued for many years after, this legislation was instrumental in the establishment of a professional civil service and to the rise of the modern state in the USA (Van Riper 1958). In South America, countries went through a similar process of modernization of civil service during which they were intensely contested, constructed, evaded, destroyed and reconstructed (Grindle 2012).

Throughout the twentieth century many states raised their level of ambition in delivering a wide range of public services to their citizens such as health care, education and social security. Increasingly, states took on the role of protecting and providing for their citizens from cradle to grave through welfare state interventions which further increased the need for effective bureaucracy. In the post WWII era, a key element of the development

agenda was to create states in poorer countries to take on these responsibilities relying on bureaucracies. But the focus on building structures to achieve this lagged behind in many places with states that remained weak in administrative competence (Andrews, Pritchett, and Woolcock 2017). This tension is illustrated by widespread evidence of government failures and poor service delivery (World Bank 2003) along with the variation in performance of bureaucracies in seemingly weak states (McDonnell 2017, Hassan 2020). Moreover, the political environment in many places was not conducive to building effective states.

Much has been made in the post WWII period of the East Asian miracle as a paragon for building state effectiveness for the promotion of economic development and it has become an influential source of narrative evidence (Amsden 1989, Wade 1990). Case studies of these East Asian experiences highlighted the role of the bureaucracy as part of a larger system, focusing on the interplay between the public, politics and the private sector in fostering development and growth (Evans 1995, Woo-Cumings 1999). In Japan, for example, Johnson (1982) argues that the postwar success can be attributed to the existence of a "pilot agency" comprising an elite core group with control over economic policy staffed by the best managerial talent. State institutions from the postal saving system to the Ministry of International Trade and Industry (MITI) were crucial in getting the needed investment capital to industry. Recruitment into bureaucracies such as the MITI was selective (2-3% of exam takers were admitted) and top roles were prestigious. Importantly, there were close ties between politicians and bureaucrats based on shared values and agreed policy goals. Retired senior servants were often placed in the upper echelons of private enterprises to maintain the link between public and private sector.

The rise of South Korea, similarly, is prominently attributed to the rise of a well-functioning, activist state (Wade 1990). Like Japan's MITI, Korea had a "pilot agency" – the Economics Planning Board (EPB) – which coordinated and dictated economic policy (Cheng, Haggard, and Kang 1998). Korea, like Japan had strong informal networks supplementing the bureaucratic structure (e.g. in 1972, 55% of those who passed on entrance exams came from graduates of Seoul National University). In fact, a defining characteristic of policy making in "developmental states" is the significant influence that senior bureaucrats, part of the developmental elite, have on policy design compared to Western democracies (Johnson 1982; Leftwich 1995).

The template for effective states and its importance is less evident in the writings on development in the field of economics. The study of bureaucracy was largely marginalized by economists and took root mainly in the public choice literature away from the mainstream. Moreover, this led to a range of negative stereotypes being developed, characterizing bureaucrats not as servants of the people but as self-interested and venal (Tullock 1965, Niskanen 1971). This contrasts with the more noble imagery of social scientists such as Max Weber whose vision of bureaucracy emphasizes its potential for transformational change. To the extent that economists took on the challenge of understanding bureaucracy, it was viewed as a natural extension of principal-agent problems but there was little application of how these ideas could be applied in practice or indeed about how they might influence the process of

development.

For much of the post war period, the treatment of bureaucracy was tied to the more general absence of a nuanced understanding of what made states effective in supporting economic development, with more attention paid to what good policies looked like rather than how purposeful government could bring them about. The prevailing view was that government effectiveness was a technocratic problem which could be fixed by knowledge transfer and accompanying resources in some cases generated domestically and in others through external support via aid or development loans. The possibility that states lacked the capacity to absorb such knowledge or misuse resources received little attention except among a fringe of thinkers at the time such as Krueger (1974) and Bauer (1971).

2.2 Weberian Facts

When approaching the issue of bureaucratic effectiveness, it is useful to have some background facts in mind. In honor of Max Weber who, above all, brought issues of bureaucratic effectiveness into social science, we shall refer to these as *Weberian Facts*. To establish these, we use measures of bureaucratic quality based on data from the Varieties of Democracy (V-Dem) project. These measures, assembled from a wide range of variables related to political systems and regime types across the world, are widely used by political scientists. They also have exceptionally wide temporal and geographical coverage.[4]

We use two variables to measure how bureaucracies work according to Weber's "ideal type" of a public bureaucracy. The first is called "meritocratic recruitment" which tries to capture if appointment decisions in the state administration are based on skills and merit, as opposed to personal and political connections.[5] The second is "rigorous and impartial public administration" and is based on an assessment of whether public officials generally abide by the law and treat like cases alike, avoiding arbitrariness and bias. These two variables capture key dimensions that major civil service reforms such as the Northcote-Trevelyan reform of 1854 or the Pendleton Act of 1883 have tried to influence.[6] We present three core findings from looking at patterns in the data across countries and over time.

Fact 1: Persistence and clustering of bureaucratic quality

This is established in Figure 2 based on the overall bureaucracy score, which is computed

[4]Cross-country analyses of the relationship between bureaucratic quality and growth have been pioneered by Evans and Rauch (1999) and Evans and Rauch (2000). Evans and Rauch (2000) use cross country regressions to show that after controlling for human capital and GDP per capita, "Weberianness" capturing meritocratic recruitment and predictable career ladders for bureaucrats can predict growth rates. They find significant correlations between conforming to Weber's ideal and growth, though this is driven largely by East Asia which grew rapidly in this period and scored highly on the bureaucracy scores. Recent work by Pritchett (2021) studies the cross-country correlation between broader state capability measures and socioeconomic outcomes. Our V-Dem analysis complements these analyses by significantly extending the coverage both in terms of countries and time period, as well as focusing on specific measures of bureaucracy.

[5]Appointment decisions include hiring, firing, promotion and transfers. The question refers to the de facto rather than de jure situation.

[6]Each variable is coded independently by around five experts in the political history of each country on an ordinal five-step scale. These survey responses are then aggregated using a Bayesian item response theory measurement model to account for coder uncertainty and bias (Coppedge et al. 2019).

as the average of two sub-indices: meritocratic recruitment and impartial and rigorous administration. Two things stand out. First, there is strong persistence in bureaucratic quality over time with most of the variation being cross-sectional rather than longitudinal, especially in country ranks. One way to look at this is that average level differences across countries (captured using country fixed effects) alone explain as much as 73% of the overall variation in bureaucratic quality. The second part of Fact 1 is the strong within-country correlation in the two underlying measures of bureaucratic quality; the correlation coefficient is 0.54. This suggests that there are common underlying factors which relate to both dimensions of bureaucratic quality (or at least in the method of assessment among those who code it) – bureaucratic quality thus appears to cluster, in parallel to state capacities as argued in Besley and Persson (2009).

Fact 2: Development and bureaucratic quality are positively correlated

There is a strong positive cross-sectional relationship between the level of bureaucratic capacity and the level of economic development as measured by GDP per capita. To see this, we plot GDP per capita against the overall bureaucracy score in 2016. The left panel in Figure 3 plots the raw relationship.[7] The variance of average bureaucracy scores decreases at the highest GDP levels. The right panel in Figure 3 shows, for any given GDP per capita value, the lowest observed bureaucracy score of all countries with a higher GDP per capita. High-income countries have much higher bureaucracy scores on average, but there is still some variation at the high-income threshold (around 23,000 US$ in 2016). However, there is no country above this income threshold with a bureaucracy score less than 0.43, corresponding to the 42nd percentile. This suggests that there are no high income states that have not also built effective bureaucracies on the V-Dem measure, although the direction of causality is far from clear.

Fact 3: Improvements in bureaucratic capacity are positively correlated with economic growth

To see this, we show that there is a positive within-country relationship between improvements in the quality of the bureaucracy and economic growth. Table 1 shows the results of a panel regression of (log) GDP per capita[8] on our measures of bureaucratic quality. The annual data is collapsed to five-year periods to reduce noise. All regressions include country fixed effects, year fixed effects and include a lagged dependent variable. Overall, we find a positive correlation between variation in our bureaucracy measures and economic performance. This positive association is strongest for meritocratic recruitment. The association for rigorous and independent administration is positive but statistically insignificant (Columns 1-3). Since both measures are correlated (Fact 1), we compute the mean bureaucracy score by averaging across the meritocratic recruitment and rigorous/independent

[7] Note that OPEC countries (and most other oil-rich countries) are dropped from the sample.

[8] To maximize sample coverage, we rely on the GDP series provided by the Maddison Project, version 2020. The results are robust to alternative GDP series.

administration dimensions. The positive association is robust when using the aggregate index (Column 4), and also holds up after the inclusion of country-specific trends (Column 5). While these are only conditional correlations, they suggest that regardless of the direction of causality, bureaucratic development does proceed hand-in-glove with economic development much as we would expect if effective bureacracy is an important dimension of development.

This crude quantitative cross-country evidence corroborates the narrative case-study evidence that suggests a positive link between bureaucratic quality and growth. Designing an effective system of bureaucracy, however, presents many challenges. There is no single template and, even in countries which are deemed to be effectively governed, there are on-going debates about how to design bureaucratic systems. Moreover, new challenges are constantly emerging making it necessary for bureaucratic systems to adapt to new realities. A case in point is the recent COVID-19 pandemic, which we would expect to precipitate significant reforms in the way in which public health systems are administered and embedded within government systems.

2.3 Summary

This section has outlined the narrative, historical and macroeconomic evidence on the relationship between bureaucracy and development. Our agenda in the remainder of the paper is to re-examine what modern economics has to say about this relationship. In the next section we begin to unpack this relationship by examining the literature on principal-agent problems which emphasizes how selection, incentives and matching can all influence bureaucrat performance. In recent years, the arrival of new survey and administrative data and of new methods such as RCTs has led to a renaissance of work in this area. We then embed these principal-agent relationships in a system that also involves different bureaucratic layers, politicians, citizens, private sector firms and other non-state actors such as NGOs (see Figure 1). This road has been less travelled but conceptualizing bureaucracies as systems could further our understanding of why some bureaucracies are successful at fostering development whereas others are not. This type of analysis is also necessary if we are to identify viable avenues of reform of these systems many of which of which feel long overdue in developing countries.

3 Bureaucracy Through the Lens of Principal-Agent Problems

We now explore research on bureaucracies in economics through the lens of principal-agent problems, where a principal (a higher tier bureaucrat or politician) is trying to control the behavior of an agent (a bureaucrat). Given the extensive economics literature on this, it constitutes a "safe space" for economists to apply their ideas and provides a powerful framework for exploring three related core elements that affect bureaucratic performance: incentives, selection, and measurement. For now, we are interested in the bilateral principal-

agent relationships between senior and junior bureaucrats, as illustrated for Department A in Figure 1. We will also explore additional complexities that come from considering the importance of matching, multi-tasking and investing in expertise by both the principal and agent.

As a starting point, suppose that the performance of a bureaucrat i at time t and serving in the unit (e.g. department) $j = J(i,t)$ as being given by:

$$y_{it} = g(\theta_i, e_{it}, \nu_{J(i,t)}) \tag{1}$$

where y_{it} is a performance measure which depends on the bureaucrat's type, θ_i, the amount of effort e_{it}, and features affecting the nature of the task summarized in the variable $\nu_{J(i,t)}$.

Equation (1) serves as a useful way of organizing some of the current research and remaining challenges. The organization chooses incentives of the agent $I(y_{it})$ which depend upon the performance measure y_{it} (e.g. a piece-rate or promotion contingent on output). The incentives reflect a choice of organizational design. The standard assumption is that effort e_{it} is not observable and that the principal who designs the organization will anticipate this so that effort, e_{it}, is chosen endogenously and is incentive compatible.

Formally, let $U(I(y_{it}), e_{it}, \theta_i)$ be the agent's utility function with output y_{it} and effort e_{it} where the agent's type is also allowed to affect their preferences. Utility is increasing in I and decreasing in e_{it}, so rewards are desirable and effort is costly. A punishment is therefore something that lowers I. The incentive compatibility condition is then:

$$e_{it} = argmax\{U(I(y_{it}), e_{it}, \theta_i)\} \tag{2}$$

Although not explicit, this framework also captures the role of corruption (or political capture) in the public sector through both effort and type. Corruption is captured as part of the differences in selection or effort choices that reduce performance (e.g. shirking as "theft of time"). The framework also allows for the possibility that effort affects an agent's consumption through both monetary incentives (such as a bonus pay, promotions, but also firing) and non-pecuniary incentives (such as prosociality or prestige).

3.1 Incentives

Equation (2) ties together incentives and effort. The reward structure determines how performance is monitored and the sticks (such as firing) and carrots (such as promotions, bonus based on yardstick competition across different units) that are applied. A common observation for public sector organizations is that such explicit incentives are rarely used (Holmstrom and Tirole 1989, Dewatripont, Jewitt, and Tirole 1999a, Dewatripont, Jewitt, and Tirole 1999b). Firing costs are often high for public servants, and formal incentives are rarely a feature of bureaucratic remuneration.

The new public management literature of the 1980s and 90s led to a number of policy experiments on incentives and proved to be controversial (see Hood 1995 for a review).

Important sources of controversy surrounded issues of multi-tasking, perverse incentives and high transaction costs due to the increased need of specifying and monitoring contracts (Williamson 1979). In recent years, however, there has been a renewed interest in whether there is greater scope for such rewards. These studies of incentives face a series of challenges that are particularly salient in the public sector context.

3.1.1 Difficulty of measuring performance

As Equation (2) shows, the implementation of incentive contracts requires a mapping between output and reward. In the public sector, the overarching challenge in the implementation of incentive contracts is the measurement of performance. Bureaucrats complete complex tasks that are particularly difficult to quantify. To measure output, work in private sector settings would focus on specific production processes, such as the installation of windshields (Lazear 2000), the picking of fruits (Bandiera, Barankay, and Rasul 2009), or line-level productivity in factories (Atkin et al. 2017). While such well-defined tasks may exist for front-line providers such as nurses or teachers (Ashraf, Bandiera, and Jack 2014, Muralidharan and Sundararaman 2011, Duflo, Hanna, and Ryan 2012), measuring output for more senior bureaucrats who implement policy and design rules is more difficult and sometimes performance is proxied by compliance with rules.[9]

Furthermore, organizational goals in the public sector are most often *multi-dimensional* and *non-verifiable*. The first of these raises the issue of how different dimensions of performance are aggregated and/or traded-off against each other. The second implies that it is difficult even ex post to establish whether a particular goal was met. Another issue, which we refer to in greater detail below is attribution of individual contributions in team production, where the measure of performance cannot be disentangled across agents (Holmstrom 1982). Finally, with most transactions occurring inside the organization, output is seldom evaluated in markets, thus making it hard to value (Downs 1965).

Measurement issues are further compounded by challenges of mission design. Bureaucracies by their nature are not geared towards narrow goals based on financial criteria. Thinking of bureaucracies as mission-driven organizations is most closely associated with Wilson (1989) and is also emphasised in Tirole (1994). The notion of a mission is a catch-all for a range of outcomes that a bureaucracy might pursue.[10]

The microeconomic literature has taken several approaches to performance measurement. The most common approach restricts the analysis to bureaucrats and tasks that can be more easily measured, like agricultural extension workers (Dal Bó et al. 2021), revenue collectors (Khan, Khwaja, and Olken 2016, Khan, Khwaja, and Olken 2019, Aman-Rana 2020), health care providers (Ashraf and Bandiera 2018, Khan 2020), teachers (Akhtari, Moreira, and Trucco 2020, Leaver et al. 2021, Brown and Andrabi 2021), procurement offi-

[9] More generally, a major challenge in low state capacity settings is limited ability to verify reported compliance (Andrews, Pritchett, and Woolcock (2017)).

[10] There has been an increased effort in trying to establish how bureaucracies are performing. As a result, there has been great interest in cross-country comparisons. One famous example is the World Bank's Doing Business project which provides evaluation and ranking across a range of state roles in supporting markets. For example, there is an attempt to measure how costly it is to set up a new business.

cers (Bandiera et al. 2020, Best, Hjort, and Szakonyi 2019) or judges (Dahis, Schiavon, and Scot 2020, Mehmood 2021). The clear advantage of this approach is the direct mapping from individual to a comparable outcome. The disadvantage is that this approach works – with exceptions – mostly for lower tier civil servants who are more specialized.

To make progress, a second approach has followed the CEO literature (Bertrand and Schoar 2003) by attempting to map higher-level individuals to an aggregate outcome. In the private sector setting, CEO traits may be related to company-specific outcomes such as profits or stock market returns. Examples in public organizations include provincial governors and GDP growth (Jia 2017), governors and colony-level revenue generation (Xu 2018), field office managers and office-level outcomes (Fenizia 2020), and district-level development outcomes (Gulzar and Pasquale 2017). While this approach allows the study of the impact of more senior officers on aggregate outcomes, the estimated effects are invariably reduced form. This makes it hard to pin down the exact mechanism through which bureaucrats affect outcomes. Furthermore, this approach is also limited to organizations with many comparable high level units that serve the same functions, such as field offices or districts (also known as M-form hierarchies, Qian, Roland, and Xu 2006).

Finally, another strand of the literature uses subjective performance measures. Such ratings are frequently found in internal evaluations across both private and public organizations. Rasul and Rogger (2018), for example, code administrative project reports to obtain project completion ratings and relate them to management practices. Limodio (2021) uses internal project performance ratings of the World Bank to study the allocation of World Bank staff. Bertrand et al. (2020) field a large-scale survey in which they collected subjective assessments of senior Indian civil servants among dimensions such as effectiveness, probity or pro-poor orientation. The advantage of this approach is that it can be applied to any task and output (including qualitative), providing a more holistic measure. The disadvantage is that perceptions could be biased, thus calling for the need of objective measures to validate or complement.

3.1.2 Multi-tasking and implementation challenges

Even when output measures are available, the choice of *how* to map output to reward remains an open question. Assuming that output only has a single dimension is often unrealistic. Bureaucrats also frequently work across multiple tasks so that e_{it} is multi-dimensional too where agents work on a portfolio of different tasks. Bureaucrats can thus choose which tasks to concentrate their effort on and hence which outputs are favored (Holmstrom and Milgrom 1991).[11]

The main implication of multi-tasking which has been discussed extensively arises when some tasks are more easily measured than others and are incentivized. This is particularly problematic when the efforts put in different dimensions are substitutes. A classic example is when teachers who are incentivized according to test results focus excessively on this

[11] Another dimension of a bureaucrat's action could also be whether to ask for the a bribe. Then whether a bribe is paid becomes a dimension of (non)-performance.

rather than on all round performance. One way around this is to get better measures of performance on alternative dimensions and the other is to have a less steep incentive scheme. In many settings, it is easier to implement a non-linear compensation scheme, such as a bonus paid for the highest performer (e.g. a monthly competition), or a threshold rule (e.g. bonus paid for each student with straight As). While such compensation schemes are abundant, such non-linearities have distortionary effects. In the education setting, for example, conditioning teacher remuneration on test score outcomes could lead teachers to spend more time developing test-taking skills rather than general instruction (Glewwe, Ilias, and Kremer 2010). If teachers are compensated based on the number of students passing an exam, teachers may also divert effort away from the inframarginal students towards the marginal students close to the passing threshold (Neal and Schanzenbach 2010, Ahn and Vigdor 2014). Similarly, when incentive contracts reflect tournaments, the incentive effect may be large for those who are marginal but absent for those who are inframarginal. In Khan, Khwaja, and Olken (2019), for example, high performing revenue officers are rewarded with the transfer to their preferred work locality. The incentive effects, however, depend on how many other officers compete over the same locality. Officers competing over popular localities may thus be disincentivized if they perceive their chances to "win" to be low. Similarly, officers who prefer less popular districts may have little incentive to exert effort if they stand to receive their allocation anyway.

The second consideration for designing incentive contracts is whether to contract on output or input. Output is often not only imperfectly observed but also subject to shocks beyond the control of the bureaucrat. However, in some contexts inputs are easier to observe and more closely reflect deliberate choices made. In the teacher example, performance pay could be either based on output – e.g. test scores (Muralidharan and Sundararaman 2011) – or based on inputs – e.g. teacher attendance (Duflo, Hanna, and Ryan 2012). The key difference lies in how much autonomy is granted to the bureaucrat. By contracting on inputs, the designer implicitly commits to a specific mapping between input and output. To the extent that the production function is more complex, however, the bureaucrat – by virtue of expertise – may possess better information about the optimal mix of inputs. Dal Bó et al. 2021 provide evidence for this in the context of agricultural extension workers in Paraguay. When provided with a monitoring technology to supervise subordinate workers, they find that middle-managers prioritize those subordinates who would be more responsive to the treatment. Finally, there is a general concern that incentives are harder to implement for more senior civil servants. To prevent influence activities and political interference, classic bureaucracies have typically relied on easily measurable characteristics such as seniority (Prendergast 1999, de Janvry et al. 2020). A downside of such rigid rules however is that they may disincentivize performance (Bertrand et al. 2020). In general, incentivizing on inputs may make more sense when outcome is difficult to measure or monitor, e.g. patient health, and when production inputs are clearly identifiable, feasibly measured, and non-substitutable, e.g. teacher attendance. Incentivizing on outputs may make more sense when production inputs are difficult to identify, measure, or monitor, e.g. tax collector's

effort, and when outcome must meet a threshold, e.g. test scores.

Despite challenges in the design and implementation of incentives that can make these fail or even backfire, recent research does suggest that incentives "work" if well designed. There is now a large body of work that documents the role of incentives for front-line public service providers such as health care workers (Ashraf, Bandiera, and Jack 2014), teachers (Muralidharan and Sundararaman 2011, Leaver et al. 2021) and tax collectors (Khan, Khwaja, and Olken 2016). These studies focus on tasks for which performance is easier to measure. Multi-tasking concerns are often directly anticipated and built into the research design, mostly by attempting to measure both incentivized and unincentivized outcomes. Khan, Khwaja, and Olken (2016), for example, designed an incentive scheme to reward tax collectors based on revenue collection. To test for the role of multi-tasking, they include two additional treatment arms: a "revenue plus" that ties the bonus not only on revenue generation but also taxpayer satisfaction, and a "flexible bonus" that is based on a more holistic subjective evaluation.

3.1.3 Non-monetary incentives

Despite the renewed interest in incentives in public organizations, the use of explicit, monetary incentives remains the exception rather than the norm. Instead, bureaucracies have relied on alternative, indirect and non-monetary means to incentivize performance, such as leveraging heterogeneity in the desirability of (same-seniority) postings either along vertical traits (e.g. prestige) (Iyer and Mani 2012, Jia 2017) or horizontal traits (e.g. personal preference) (Khan, Khwaja, and Olken 2019). The implementation of such incentive schemes, however, still hinges critically on the accurate measurement of performance. It is perhaps for that very reason that indirect means of inducing performance, for example through rotations, have often been excessively used for political purposes (Akhtari, Moreira, and Trucco 2020) and satirized as a "bureaucratic merry-go-around" (De Zwart 1994).

Finally, it is often suggested that those who work in bureaucracies are mission-motivated and thus care about the output even if their monetary compensation is not explicitly tied to it (Ashraf and Bandiera 2018, Besley and Ghatak 2018, Bénabou and Tirole 2006). Mission may thus be a potentially cost-effective way to incentivize performance when bureaucracies have limited budgets. Khan (2020) provides experimental evidence from healthcare workers in Pakistan that greater mission emphasis helps increase worker performance and improve health outcomes. Importantly, the greater focus on mission helps increase performance even on dimensions that were not explicitly incentivized, suggesting that mission-motivation may also help alleviate multi-tasking problems. In the contemporary US setting, Spenkuch, Teso, and Xu (2021) show that ideological alignment of procurement officers with the serving President increases performance and self-reported morale.

3.2 Selection

A major challenge in bureaucracies is recruitment, having effective processes for identifying and curating talent. A major challenge throughout history has been the fight against nepo-

tism in bureaucratic recruitment (Xu (2018)). But it is not only talent that matters. The kind of power that accrues even to low-level bureaucrats along with difficulties in monitoring, makes selection on motivation critical. Many bureaucracies are geared to encourage lifetime engagement with very little mobility in and out of the system, with only the apex positions filled by political affiliates.

Selection provides a way of influencing the type of the bureaucrat, θ_i, in equation (1) and (2). This could change either the output associated with effort, which captures competence and the way that they perceive the cost of effort and/or their desire to pursue non-pecuniary goals as emphasized by Max Weber in his conception of bureaucracy. Thus, affecting selection is a potentially powerful means of changing the performance of a bureaucracy.

In view of this, it is not surprising that a large literature has emerged that looks at bureaucrat selection. It has two main strands. The first is concerned with how to attract the "right" talent to the public sector. A key challenge concerns a potential trade-off between mission and financial motivation. In contrast to private firms where the main goal is profit-maximization, public organizations often pursue a wider range of objectives, involving elements of welfare maximization or attributes of the public goods provided. Individuals who select into the public sector thus may not only care about remuneration, but also the mission of the organization (see, for example, Besley and Ghatak 2005, Le Grand 2003, and Tirole 1994). Existing work is mostly experimental and focused on front-line providers, varying advertised job traits shown to prospective candidates at time of application such as salaries (Dal Bó, Finan, and Rossi 2013, Deserranno 2019), or the salience of the pro-social vs. career nature of the task (Ashraf and Bandiera 2018).

A second strand of work centers around the balance between rules vs. discretion in the selection process. Traditionally, bureaucrats were selected to serve "at the pleasure" of the ruler or politician, giving the principal full discretion in the selection process. At the opposite end of the spectrum is rule-based selection, where the principal ties its hands using a selection rule such as a competitively-based entry exam. The theoretical trade-off lies between balancing the value of (soft) private information against bias: politicians can use discretion to appoint the best matches, but can also use discretion to favor those in their network, sometimes for private gain. While a rule-based selection limits such favoritism, much depends on the details of the rule and whether it effectively screens on traits that can predict performance. Even though they are used extensively, there is little evidence on the effects of competitive exams on the selection of civil servants. The research that exists suggests that variation in entry exam scores are predictive of later performance (Dahis, Schiavon, and Scot 2020, Bertrand et al. 2020), but relies on variation in test scores *conditional* on being selected, thus leaving the extensive margin unexplored. Moreira and Pérez (2021) study how the Pendleton Act shaped the composition of US customs officers. While they find evidence that competitive exams led to more hiring of individuals with higher previous occupational status, they do not find any impact on performance.

When it comes to discretion, existing work has documented negative effects on the hire quality. In Brazil, appointments of politically aligned public servants are less qualified

(Colonnelli, Prem, and Teso 2020); in the administration of the British Empire, governors connected to the minister are allocated to more favorable positions while performing worse under a system of discretionary appointments (Xu 2018). These results resonate with the findings in private sector settings, where managers who hire against test recommendations select applicants with lower subsequent retention (Hoffman, Kahn, and Li 2018). Two papers document positive selection effects under a discretionary system of appointment. Weaver (2021) collects rich data on side payments for public sector positions in healthcare. In the developing country setting under study, he finds that greater willingness to pay is correlated with quality, resulting in positive selection. Another paper that shows positive selection effects of patronage is Voth and Xu (2020), who show that Admirals leverage their social connections to promote better officers when facing competitive pressure during times of war. This resonates with work in labor economics that has documented the informational value of referrals in hiring (Burks et al. 2015). There is, however, limited work that connects both strands of the literature by studying how selection rules affect the quality of the final hire by endogenously changing the applicant pool.

3.3 Matching, training and task design

What we have discussed so far are classical ways of addressing principal-agent issues as applied to bureaucracy. We now discuss two additional issues that go beyond the standard approach and, even though the work is recent, are now attracting increased attention from researchers.

3.3.1 Task Assignment and Matching

In our discussion of selection we discussed the potential for matching mission-preferences or competence to positions. The match between bureaucrats and tasks is manifest in the variable $v(j,t)$ in (1). There is a growing literature that exploits the mobility of bureaucrats across different units to disentangle what are attributes of bureaucrats and the location that they work in (Best, Hjort, and Szakonyi 2019, Fenizia 2020, Dahis, Schiavon, and Scot 2020, Prem and Muñoz 2021). This applies ideas that have gained currency in corporate finance where transitions of executives are used to estimate "CEO fixed effects" (as pioneered by Bertrand and Schoar 2003). In contrast to the private sector literature that typically focuses on transitions across firms, work in the context of bureaucracies has largely exploited transitions *within* an internal public sector labor market. A potential advantage of doing this in the public sector compared to the standard "CEO fixed effects" approach is the much larger number of transfers that can be exploited for empirical purposes.

The increased availability of administrative data has meant that work in this area can adapt the so-called "AKM-framework" (Abowd, Kramarz, and Margolis 1999, Card, Heining, and Kline 2013 for the estimation). The results typically find large effects, suggesting that bureaucrats do have a substantial bearing on outcomes (Best, Hjort, and Szakonyi 2019). Institutional differences between private and public organizations do however affect the interpretation of the results. The AKM model is motivated by considering a competitive

market environment where wages reflect the marginal product of labor. In contrast, the use of a performance outcome instead of wages, does not have a straightforward theoretical foundation. Furthermore, wages in the public sector setting typically reflect differences in positions, and transfers are not driven by market forces. To provide evidence for "exogenous mobility" as required for the consistent estimation of the fixed effects, work in this area typically provides some corroborating evidence in the form of event studies to document the absence of pre-trends around bureaucrat transfers.

While the decomposition literature is interested in estimating individual and organization effects, a new literature has emerged to estimate match effects. Doing so is motivated by the low exit rates among bureaucrats; once selected, bureaucrats tend to remain within an organization. This can create skill mismatches when technology and the external conditions change. How to make best use of the existing talent pool thus becomes an important question. In the context of a public organization, whether bureaucrats should be generalists or specialists is an issue of particular interest. A traditional argument in public administration is that bureaucrats ought to work across a wide range of tasks and ministries, serving the state and not particular organizations (e.g. Northcote, Trevelyan, and Jowett 1854). The disadvantage, of course, is that frequent rotation across different tasks will limit the amount of specialization that can be attained. While there is work on skill-mismatch in the private sector, research on public organizations remains limited (Ferguson and Hasan 2013).

How far skill mismatch is malleable through training is also an interesting issue on which evidence is also scarce. As the state has grown in its scope and scale, there is need for increasingly specialized competence in managing how the state operates and, even routine tasks, can be completed with higher levels of efficiency when training is good. How far the state provides such training on the job or relies on it being provided elsewhere is a key issue. Moreover, training is not just about skills as it can instill norms and values that are required to deliver tasks in the right way to maximize benefits to citizens. Some kinds of bureaucracies involve significant amounts of specific human capital that can only be acquired over a career. And the system can be structured to maximize such skills being acquired by permitting a high degree of specialization. Others operate a rotation system where the expectation is that individuals move around within the system and operate as "generalists".

A related discussion on matching bureaucrats to workplaces revolves on whether there is a tension between embeddedness and autonomy. On the one hand, greater embeddedness of bureaucrats into society and business can increase bias and promote clientelism. On the other, lack of embeddedness can reduce the amount of local information that bureaucrats can leverage – a key feature highlighted in the earlier work on the rise of East Asia.

The question of how organizational design can strike the right balance in this trade-off is an old issue that resonates with "home avoidance" rules implemented across many bureaucracies (see, for example, Wade 1985, 1992). The existing empirical work finds evidence for both channels. On the negative side, Vannutelli (2021) exploits the staggered introduc-

tion of random auditor assignment across Italian municipalities to show that municipalities paired with a random (vis-a-vis mayor nominated) auditor experience greater revenue performance. Similarly, Xu, Bertrand, and Burgess (2020) exploit random variation in home assignment owing to an allocation rule. They find that Indian civil servants allocated to their home states are perceived to be less able to withstand illegitimate political pressure, with the negative effects stronger in high corruption states. Bandiera et al. (2021) show in the context of Uganda how delivery agents favor their own social ties in the implementation of policies. Finally, a set of papers also document the positive effects of embeddedness. Bhavnani and Lee (2018) show that local embeddedness is associated with greater provision of schools. In the context of colonial administration of India during the 1918 pandemic, Xu (2021) shows that local administrators are more responsive in the provision of disaster relief, reducing overall mortality. Balan et al. (2020) document in the context of the DRC – a low tax capacity setting – how local chiefs allow the state to tap into local information in order to increase tax collection through better targeting.

3.3.2 Task design – formal vs. real authority

The standard assumption in principal-agent models is that the agent is the informed party and that the principal is trying to control his/her behavior through incentives. But this is inadequate in studying many real-world situations. Principals also have to take decisions that have an impact on the success of an operation beyond the design of incentives so that (1) becomes

$$y_{it} = g(\theta_i, e_{it}, E_{it}, \nu_{J(i,t)}) \tag{3}$$

where E_{it} is the principal's effort. When the agent is putting in effort, the agent will need to know what decisions are being made by the principal which may also be unobservable, creating a problem of double moral hazard.

The task assignment in (3) can be thought of as representing a division of expertise between the principal and agent based on their knowledge and information about the task in hand rather than a strictly hierarchical "chain of command". In an important contribution, Aghion and Tirole (1997) allow these information structures to be endogenous, based on decisions to "invest" in knowledge and expertise. Who is better informed about the task is then endogenous. This determines "real" authority in the relationship if one person has invested much more than another.

These ideas are useful in shaping empirical studies, particularly those which examine training and accumulated expertise in determining the effectiveness of a bureaucracy. Thus, Rasul and Rogger (2018) collect rich data on project completion and management practices in the Nigerian Civil Service. They find a robust positive association between project completion and autonomy. This is also a feature of Bandiera et al. (2020) who study public procurement in Pakistan by experimentally varying the amount of autonomy the procurement officer has vis-a-vis a monitor (principal). While important work has begun in this area, it is ripe for further investigation in future.

4 Aspects of Bureaucratic Systems

In the previous section, we discussed the role of bureaucracy for development in the context of principal-agent relationships. While most of the recent empirical literature revolves around these interactions, we next consider system-level relationships, denoted by the dotted lines in Figure 1. As the figure illustrates, bureaucracy is a system and not just a collection of individuals. The principal-agent relationships that we studied in the previous section are embedded within this system. We now move outside the "Department A" box in Figure 1 and look at a wider set of influences including relationships between departments within government, the role of politics and accountability to citizens and the relationship between bureaucrats, the private sector and NGOs.

When looking at organization design issues, it is particularly important to consider how the actions of agents in one part of an organization relate to those performed elsewhere. We can now conceptualize an organization in terms of tasks that are assigned to specific bureaucrats and the output(s) that they generate. Let N be the number of bureaucrats working within an organization, then we can replace equation (1) with the following expression:

$$y_{it} = g(\theta_1, ..., \theta_N, e_{1t}, ..., e_{Nt}, \tau_i, \nu_{J(i,t)}) \tag{4}$$

where τ_i is now the task assignment to bureaucrat i. This formulation emphasizes that the output produced by i depends on the task allocation and the types and efforts of everyone within the system. This formulation is quite general allowing for the possibility that efforts are complements with some agents so $\partial^2 g/\partial e_{it}\partial e_{jt} > 0$ for $j \neq i$ and types too can be complements in production $\partial^2 g/\partial\theta_i\partial\theta_j > 0$ for $j \neq i$. We can think of aggregating the performance of the whole bureaucracy as a kind of production function

$$Y_t = F(y_{1t}, ..., y_{Nt}). \tag{5}$$

Designing a system requires finding a way of bundling tasks into roles and having a managerial structure to supervise these roles. Except for the increased complexity and the need for coordination and communication, many of the core considerations are essentially no different from those we studied in the previous section. To see this, consider a linear aggregation as a special case of equation (5) – in this case, individual contributions enter separately and do not interact with the performance of others. When there is a single principal, this is like the standard team incentives problem as studied by Holmstrom (1982). The lessons from previous section – the need to design appropriate incentive structures and selection processes to assemble an effective organization – thus apply here as well.

In reality, however, bureaucracies are complex organizations with many interdependent departments, divisions and agencies. One feature of the complexity is that different parts of the bureaucracy need to interact and hence incentives for one agent cannot be considered in isolation. In this case, the intermediate outputs in equation (5) could be complements. A concrete example of complements would be when improving the issuance of ID cards to citizens makes it more feasible to tag them for the purpose of transfer programs. As

another example, the study of procurement officers by Bandiera et al. (2020) suggests that the effects of greater autonomy are highly heterogeneous depending on the identity and alignment of the monitor.

A systems perspective thus brings out complex interactions between individuals, tasks and organizations and the importance of task assignment, coordination and aggregation. How tasks are defined, bundled and allocated to individuals and organizations has to do with task assignment and varies with the nature of the task, say building infrastructure versus providing healthcare, while how individual performance (or capability) maps into organizational performance (or capacity) has to do with the question of coordination and aggregation. For instance, enhancing citizen welfare through improving health outcomes is a "wicked hard" problem that requires addressing assignment, coordination and aggregation challenges that go beyond the mandate of the health agency and that involves multiple public agencies, and possibly other providers like the private sector and NGOs. The existing capacity of the state can have a large bearing on this process but this can also change over time with investments in state capacity that allow the state to deliver an increasing number of public services more effectively (Besley and Persson 2011).

In the context of Figure 1 showing a stylized bureaucracy, the allocation and task assignment covers both assignment from politicians to different departments and agents within those departments as we already show in our figure, but also between public agencies and firms and NGOs, who can be viewed as not just the recipients of public services but also as alternate providers, and that this relationship can change over time with investments in state capacity.

Moving from the individual to the system-level also brings challenges for empirical work. There are many challenges for credibly evaluating the drivers of bureaucratic effectiveness "at scale" as we move from individual-level analyses (equation 4) to an organizational-level (equation 5). The focus on organization-level features of the bureaucracy limits – by definition – the number of units that can be studied. This limits the extent to which inference can be drawn and results can be generalized.[12] More practically, implementing large-scale RCTs across different arms or layers of the bureaucracy is challenging. As a result, credible evidence on such system-level questions are relatively scarce. In the following, we thus provide a (non-exhaustive) set of aspects related to the study of bureaucratic systems that future work could focus on.

4.1 Departmental organization, learning and adaptability

What *does make* a system different from studying individuals' principal-agent problems is the need for coordination of tasks. A bureaucratic system has the difficult task of joining up different departments into a complete system where coordination is valuable.

Effective government requires that tasks are combined effectively achieving the right balance between coordination and specialization. Some tasks such as issuing permits can

[12] In the limit, such system-level studies resemble the cross-country evidence we introduced as part of the Weberian facts in Section 2.

be quite specific and specialized whereas others such as enforcing law and order are hard to break down into specific parts. As in any complex organization, the typical *modus operandi* is assembling teams with interlocking skills and responsibilities. The scope, size and hierarchy of such organizations is not straightforward and many governments struggle with getting design right. Team based production also creates challenges of designing inter-dependent rewards since the performance of one team member can effect how other members of the team are performing.

Even the simple framework captured in equation (5) now brings a very rich set of possibilities which illustrate why focusing on solving specific principal-agent problems (e.g. a narrow change in the remuneration system of a particular type of workers inside a specific department) may give an incomplete picture of what it might take to create an effective state. An extreme example would be a bureaucratic O-ring production technology where failure to produce one input can mean that the whole system fails (Kremer 1993).

This is not entirely fanciful. A classic case to illustrate this concerns regional development strategies that require aligning delivery of skills, finance, industrial strategy and infrastructure together. It is no good having a bureaucracy with responsibility for each of these when they cannot work together. In the UK, following the discovery of weakness in the concrete structure on a key road bringing people from Heathrow airport to central London, an elaborate monitoring system was installed. But it was discovered not to be operating when the local council responsible for paying the electricity bill stopped paying making the system inoperable. Such examples illustrate why the effectiveness of the system in its entirety needs to be judged rather than studying each component individually. To the extent that bottle-neck effects exist, simply scaling up the effects of specific bureaucratic reforms may even understate the effects of such interventions. Understanding the nature of the state's production function is thus important for linking lessons learned from specific principal-agent problems (Section 3) to the fundamental question of bureaucracy and development.[13]

Seen as a system, the study of bureaucracy is not fundamentally different from the study of organizational design more generally and follows the standard multi-departmental or M-form structure. As argued by Chandler Jr. (1977), this was a way of providing a degree of coordination as the scale of enterprise increases. Each department then tries to operate effectively within a hierarchy constructed for that purpose with some kind of general coordination coming from the centre. Moreover, production can be assessed within each department and then aggregated across the organization. This is the model used in most government bureaucracies which create departments, some of which are functionally specialized and others which are geographically organized (Qian, Roland, and Xu 2006).

While a hierarchical organization of departments helps with coordination, there are also benefits from decentralization. Bureaucracies rarely work in static environments. New technologies and policy challenges emerge which require adaptation, which depend on local conditions that are not perfectly observed by the central government. It often takes a

[13]Besley and Jewitt (1991) discusses when the structure of equation (5) allows tasks to be broken down with limited need for communication across departments in a government bureaucracy.

while to know what the best response is and how bureaucracies try to learn from their own experience and that elsewhere is highly variable. One criticism that is frequently levelled at centralized bureaucracies is that they are slow to adopt compared to a system where control is devolved to local bureaucrats. At the same time, there is also a question of whether the political economy and geography of decision making are aligned. There are potential gains from political decentralization with more local control over bureaucrats. The downside, however, is increased fragmentation and inability to coordinate. Understanding this trade-off between adaptation and control is another important area for organizational design within the public sector.[14]

This has a bearing on the question of how bureaucracies promote or prevent innovation. While career bureaucracies provide incentives for relationship-specific investment of learning on the job, in a rapidly changing world these can also become sclerotic and undermine innovation. A systems-level perspective highlights not just the importance of incentives for individuals to learn and update their skills over time, but also how to bring in new skill sets and knowledge and how to balance the "outsider" and "insider" perspectives given the needs of the system. Furthermore, a focus on norms, narratives and networks also explain the persistence of learning failures and dysfunctional cultures in some bureaucracies (Akerlof and Kranton 2011, Collier 2017).

Also important in studying bureaucratic systems is how control is assigned to different principals. The complexities that arise with multiple principals have been studied extensively in theory (for example, Dixit (1997) and Gailmard and Patty (2012)). There is a risk that principals will try to pull agents in different directions in ways that are counterproductive. As we discuss further below, this is a particular issue once politics plays a role since there is no need to think that there is any kind of consistent preference aggregation over policy. But it may also arise when there is overlapping responsibility in systems such as those illustrated in Figure 1.

4.2 The Role of Politics and Independent Agencies

Bureaucracies are embedded in a political system and a political economy lens helps to understand the operation of, as well as changes in, bureaucratic systems. Political control makes the problem of departmental organization even more interesting. In a typical bureaucracy, there is direct accountability to politics. Where politics tends to favor specific regions or ethnic groups, then that would give an incentive for the effectiveness of bureaucratic performance to be affected as well as more standard outcomes such as funding. And, as we discussed in the previous section, political priorities will also determine which functional tasks are of highest priority.

The objectives of bureaucracy are influenced significantly by politics and, to the extent that these objectives are clear and specified, there should be no inherent difficulty in bringing bureaucrats and politicians together. However, there are sources of complication. A key difference between a bureaucrat and politician is their accountability since only politicians

[14]For discussion of such issues for aid agencies, see Honig 2019.

are typically directly accountable to the citizens that they serve (Alesina and Tabellini 2007). In democratic settings, this normally works via some kind of electoral process.[15] Bureaucrats have by the nature of their office to acknowledge that the politicians are the principals and derive the legitimacy to serve in that role from their accountability to citizens.

Bureaucrats typically have longer time horizons when they are part of a professionalized bureaucracy as envisaged by Weber (1922). They tend also to be more specialized and knowledgeable about policy than politicians. But what this does to their objective function is not entirely clear. One view is that a perfect bureaucrat is one who perfectly internalizes the objective of their political masters. There is then no prospect of the preferences of the bureaucrat entering into the way in which they complete the tasks assigned to them. However, in practice bureaucrats have policy preferences of their own raising issues of how political control is asserted. This is a particular issue when there is vital expertise needed by bureaucrats. This issue has been studied extensively in political science with (McCubbins, Noll, and Weingast 1987) being a classic reference.[16] One key question is how far politicians both understand and behave strategically in light of the differences that they perceive between bureaucratic preferences and the policy objective.

One possibility is that some key political positions are staffed by bureaucrats because of political preferences. The politicized bureaucracy of key positions in US Presidential administrations is a case in point. But most political systems to some degree have some positions in the bureaucracy that are attached directly to political appointments (Forand, Ujhelyi, and Ting 2020, Gailmard and Patty 2007). While this might increase alignment between political and bureaucratic preferences (Spenkuch, Teso, and Xu 2021), it is generally argued that this is likely to increase patronage rents in government (see, for example, Mueller 2015). Even if there is no direct political control, there is the possibility that politicians use transfers of bureaucrats to sideline those who do not agree with their political preferences (see, Iyer and Mani 2012).

Just where the line is drawn between political office and bureaucracy is a matter of choice and systems approach this differently. A good example are officers within the legal system where in the US, for example, extensive use is made of elected office for judges and prosecutors (Besley and Payne 2013, Besley and Coate 2003, Lim 2013, Lim, Snyder, and Strömberg 2015). This is important because many decisions made in courts have political and distributional implications that politicians may wish to influence. Investment incentives can also be affected by knowing that any commercial disputes will be settled in a politically impartial way rather than favoring whoever is closest to political leaders. Independent judicial selection plays a key role in this along with the structures for constitutional review (see La Porta et al. 2004).[17]

[15] For discussion of models of electoral accountability, see Besley (2006).

[16] See Gailmard and Patty (2012) for a thorough coverage of the relevant theoretical literature.

[17] Perhaps the most settled example of this is the case of central bank independence. However, even there, whether central banks should be free to set their own goals or just enjoy operational independence is much debated. The pros and cons of different structures for independent agencies are discussed in Tucker (2019). Politics can never be taken completely out of the operation of any public agency and there are many detailed issues of institutional design that need to be specified.

In non-democratic settings, the accountability of politicians is even harder to discern as is how one classifies someone as a politician or bureaucrat. A good example is provincial governors of China where there is evidence of promotion incentives within the communist party hierarchy based on growth performance (Li and Zhou 2005, Francois, Trebbi and Xiao 2020). However, China is relatively unusual in having built systems of accountability for key political figures without elections (Besley and Kudamatsu 2007).

If politicians are the principals when it comes to designing a bureaucratic system, then we might expect effective administration in a bureaucracy only to arise where politics is functional. However, this is a quite complex issue to assess because the motivations of politics are so varied. For many politicians, especially in autocratic systems, surviving in power at all is the overriding objective and there are two broad complementary strategies for doing so: coercion and building a social contract. The first of these skews the priority of the state towards strengthening state power via building a police force and/or military. Then repressive states coexist along with effective bureaucrat control in some dimensions of the state.[18] For other countries, the aim may be to build a social contract where staying in power rests on providing collective goods for citizens in the form of infrastructure, health and education in exchange for citizen-support. This gives incentives to build a state whose bureaucracy can deliver these goods. With either of these strategies, other dimensions of the state bureaucracy such as strong and independent legal systems which limit the power of incumbents and bureaucrats that strengthen the independence of the legislature as a device for holding the executive in check may not be built.

Over time, the historical pattern has been in many countries to move away from using the legal system for regulatory purposes towards a great reliance on specialized regulators (Glaeser and Shleifer 2003). The core rationale for independent regulatory agencies is an understanding of failures in the political process. One is to insulate bureaucracies from short termism. This is important in areas of public investment management. The second is concerns about time inconsistency whereby politicians may not be able to commit to a future policy as in the case of utility price regulation. Independent agencies can also be an important source of expertise, creating real authority in the sense of Aghion and Tirole (1997). Whether the political process can commit to independence is moot. But many countries have been able to make such systems work. However, this is easiest when there is respect for the rule of law.

4.3 The relationship between the state, firms, and NGOs

Since firms are important drivers of economic growth, understanding the interactions between firms and the state and bureaucracy that regulates them is vital. The seminal work of Evans (1995) discusses the relationship between state and civil society with a strong focus on industrial transformation. According to his work, the most successful state is closely linked to society, a concept he coins "embedded autonomy". The economic literature has –

[18] Political scientists such as Finer (2002) have noted that the military can become an effective and quasi-independent coercive force in many political systems.

often implicitly – touched on this concept by extending traditional principal-agent models. For example, Tirole (1986) and Laffont and Tirole (1993) model politician-bureaucrat-firm relationships where politicians legislate regulation which is put into concrete action by bureaucrats. For an optimal level of regulation, bureaucrats have to interact with firms to get private information, for example on their cost structure, pollution, their market environment, etc. The fact that this information is private, valuable, and with some effort obtainable by a bureaucracy gives rise to a variety of issues. Firstly, an ineffective bureaucracy will simply be unable to obtain the information necessary for optimal regulation. Secondly, even if politicians are ill-informed and legislate sub-optimal economic policy, the bureaucracy can obtain better information when interacting with firms, thus correcting the policy through good implementation. Thus, firm influence on the bureaucracy can provide valuable information and be efficiency-enhancing, particularly in the presence of bad economic policy in weak states (Leff 1964, Bardhan 2017). Thirdly, firms can also influence – or bribe – the bureaucrat to report wrong information in order to obtain inefficiently favorable regulation. When present at a systematic level, this phenomenon has often been called *regulatory capture* or *state capture*, has been widely studied following the seminal work by Stigler (1971) and Peltzman (1976).[19] One challenge in this literature is that it often does not distinguish clearly between politicians and the bureaucracy. In the real world, laws are often drafted by ministerial bureaucracies and the legislature, so both politicians and bureaucracy can be targeted to influence legislation.

For this reason, the empirical work on regulatory capture of bureaucracies is relatively sparse and focuses mostly on case studies in several African countries as well as the post-Soviet countries. Bates (1981) studies the political economy of agricultural policies in several African countries. He observes that bureaucracy is strongly involved in the organization of agricultural markets via the establishment of marketing boards which set the prices of agricultural goods and are often the only buyer and seller of these goods. He also describes how bureaucrats provide market protection for existing firms, thus reducing competition. In the context of post-Soviet economies, Frye and Shleifer (1997) suggest three phenotypes of a bureaucracy which can act as an invisible hand, a helping hand, or a grabbing hand. They present survey results suggesting that the bureaucracy in post-communist Russia acted as a grabbing hand, characterized by bureaucracy extracting rents, a dysfunctional legal system, and predatory regulations. Frye and Shleifer (1997) and Hellman, Jones, and Kaufmann (2003) present survey evidence, for Russia and a range of transition economies, respectively, for the emergence of a capture economy where public officials and politicians sell rents to firms, and firms with connections enjoy political protection. However, in a later study, Brown, Earle, and Gehlbach (2009) find that privatization in post-communist Russia was more effective in regions with larger bureaucracy, suggesting that large bureaucracies provide better institutional support and fewer opportunities for corruption.

Over the 20th century, one of the major developments in the economic system was that the private sector increasingly took on activities that had been previously been reserved for

[19] For a review of the literature on regulatory capture, see Dal Bó (2006).

the state, such as transportation, communication, and sanitation infrastructure (see, e.g., Galiani, Gertler, and Schargrodsky 2005). During the last decades, a similar evolution has taken place for NGOs, who now increasingly provide services, particularly in developing countries. These trends make a discussion of the relationship between bureaucracies and these actors crucial to understand economic development.

The role of NGOs in a bureaucratic system can be studied to cast light on a variety of issues. NGOs often play a role as interest groups trying to influence policy. However, they are increasingly gaining attention for being alternatives to state provision of public services raising a range of strategic considerations. Employees in NGOs are typically assumed to have similar motivations to those who work in public bureaucracy and they have to overcome incentive, selection and measurement problems similar to those faced in bureaucracies. A key question, on which evidence remains limited, is whether they have a comparative advantage in overcoming these problems and hence are more effective service deliverers. It should also be noted that although NGOs can enjoy financial independence from the governments in countries where they operate, they are often dependent on receiving public money giving donors and overseas governments influence over how they operate. This gives rise to debates about whether NGO involvement is a form of neo-colonial influence of donor countries.

The decision of whether to have government or independent provision of a public service using a private provider such as an NGO is explored in theory in Besley and Ghatak (2001) and Hart, Shleifer, and Vishny (1997). They both use the classic Grossman-Hart-Moore model of investing in specific assets. Ownership then matters as it creates residual control rights which affect incentives. Private provision of a public service by an NGO is particularly valuable when it is run by staff who are strongly committed towards the service compared to the government.

One issue with NGOs, and aid organizations, in developing countries is how far they compete for human capital with bureaucracies. This depends on a number of factors including pay. In general there is a concern that in spite of their benefits in terms of quality, they can weaken the performance of public bureaucracies by competing for scarce human capital,[20] and by establishing parallel systems for service delivery. This risk is generally much higher in fragile societies that lack adequate state capacity to begin with and where the short-term considerations of international organizations have often outweighed the long-term objective of building a capable bureaucracy and an effective state (Commission on State Fragility, Growth and Development 2018). Though transition from parallel delivery systems to state delivery proves challenging, it is not impossible. In some developing countries, for instance in Bangladesh, homegrown NGOs have flourished in providing public services in the absence of public delivery, but over time they have gradually been leaving more and more public services to an increasingly richer and more capable state to deliver.

[20] In the context of rural Uganda, Deserranno, Nansamba, and Qian (2021) exploit random variation in the entry of NGO-provided healthcare workers across villages to study crowd-out. They find that the entry of NGO workers reduces the supply of government workers and total services. This is consistent with the NGO providing the combination of higher pay and strong incentives for commercial activities.

As we discussed at the outset, there is much discussion on whether effective administration allows a wider reach of the state – and where the boundary of the state should be, and whether governments should get involved in organizing production of private goods. For example, whether governments should set and run financial institutions such as banks is a subject of debate. The argument for doing so is that market failures such as externalities mean that purely for-profit operation is not optimal. Even when government does not actually take on producing a private good, it may get involved in advising the private sector and or trying to coordinate production. These functions of the state were at the heart of the kind of industrial strategies that were thought to be effective in East Asia and elsewhere (see Wade 1990). Whether there is a case for direct government involvement depends on whether government bureaucracies can operate effectively in these areas and this depends on what the exact form of market failure is and whether there is bureaucratic expertise to overcome it. Government advice to firms on technology and training needs or giving them advice about breaking into export markets requires expertise of a specific kind to be built. But it also requires that it does not result in capture by firms who seek to use their connections to the state to divert resources. Thus, selective or subsidized credit has often been thought to heighten the risk of corruption. Scepticism about running an effective public bureaucracy in some countries has resulted in them taking a more *laissez faire* approach. But this can come at the price of running a less efficient private sector.

5 Towards an Organizational Economics of the State

A little over one hundred years ago, Max Weber laid out the ideal of a system of bureaucracy with professionalism, expertise and hierarchical control. He was to some extent codifying the systems that had evolved in the world at the time that he was writing. Public administration had become a tool of state effectiveness that was allowing the state to extend its reach, raising taxes and spending on a scale unimaginable in an earlier era. One hundred years on, that process of investment in state capacity has been sustained. But the global picture is also extremely patchy. As our Weberian facts demonstrate, many countries have failed to create the building blocks for effective bureaucratic governance. This is an important dimension of state fragility which is often blamed for underdevelopment. This makes it even more pressing to understand what enables bureaucracies to be effective or ineffective in fostering economic development.

Work in social sciences in the tradition of Weber (1922) has viewed bureaucracy as part of a system interwoven with society, while ambitious programs for bureaucratic reform in the spirit of Northcote, Trevelyan, and Jowett (1854) suggest multiple margins of complementary change. A major challenge is to bridge the gap between these larger scale "macro" approaches with the more micro approach taken in economics, which has tended to focus on evaluating specific dimensions of reform often drawing on field experiments and administrative data.

This economics literature has its foundations in a standard toolkit rooted in the study of principal-agent problems. There are many studies, for example, that have looked at

the importance of output measurement, incentives, selection and matching in affecting how bureaucrats behave. Finan, Olken, and Pande (2017) reviews the literature on the personnel economics of the state that has mainly focused on understanding principal-agent problems. A key insight from this is that standard recommendations stressing the importance of incentives and selection are mostly confirmed in public sector settings. While bureaucrats, by virtue of their public tasks, are deemed more pro-social and mission-driven than private sector workers, there is limited evidence that financial incentives crowd-out or lead to the recruitment of less able workers. A growing body of work has also demonstrated that public servants are responsive to incentives in the public sector, both using explicit incentives and career concerns.

As the literature on the personnel economics of the state has matured, the study of bureaucratic reforms has raised questions about how to leverage this growing body of knowledge to meet the challenges of external validity and scaling-up. As Wilson (1887) noted a century and a half ago: "civil service reform must ... expand into efforts to improve, not the personnel only, but also the organization and methods of our government offices." Studying the interdependence between different kinds of bureaucratic activity requires giving greater weight to the study of organizational issues such as how multiple departments and agencies interact and how bureaucracy relates to and is influence by the political system. Ditto how the bureaucracy affects and is influenced by the private and non-profit sectors (see Figure 1). Expanding into this new terrain would allow us to better understand the Weberian facts – which suggest a clustering of bureaucratic quality and their positive association with economic development – as well as the wider narrative and historical literature on bureaucracy and development in the social sciences. The return from this integration of the micro and macro for identifying fruitful directions of reform of bureaucratic *systems* could be high. As we move towards an organizational economics of the state we flag five areas where new work is needed.

The first is in the area of measurement since it is difficult to measure the output of bureaucrats and bureaucracies. Some recent work has focused on subjective measures (Bertrand et al. 2020), but there is probably a great deal more that can be done – for example using remote sensing data (Donaldson and Storeygard 2016) and economic censuses (Asher and Novosad 2020) to proxy changes in GDP and other outcome variables of interest. There is also an increasing use of administrative data capturing the universe of bureaucrats in a region or country often linked to monitoring of their actions. So whether one is measuring economic growth or service delivery, moving to micro-data that captures concrete effects of the universe of bureaucrat actions is a challenge that new measurement technologies are bringing into the realm of possibility.

Second, gathering this type of economy-wide micro-data will open possibilities to evaluate system-wide reforms of what bureaucrats do and how they affect these outcomes which is often what governments are interested in. And it may be feasible to trace out the effects of different kinds of civil service reforms on outcomes that citizens care about. This would enable researchers to study more closely how bureaucrats and bureaucracies affect

the structural transformation of the economy or any other outcome at the macro, country level which is the focus of interest in the narrative and historical studies covered in Section 2.

Third, this review has indicated the need to delineate more clearly the roles of politicians and bureaucrats. In much of the political economy literature, the two are bundled together as "government", but they often perform different roles and are subject to different accountability mechanisms. Better understanding of these roles, both theoretically and empirically, is an important area for future research in developing countries. Moreover, it will enhance our understanding of how broad political characteristics, such as democracy, monitoring politicians through the media, or the extent of political oversight over the bureaucracy, affect bureaucratic effectiveness. Since bureaucrats are, in principle, accountable to politicians, making politics work better is potentially crucial to increasing bureaucratic effectiveness. Yet, at the moment, we know relatively little about this.

Fourth, the relationship between the private sector and bureaucrats requires more attention. There are many examples where the two work together to promote private sector development, but also where the private sector has "captured" politicians and bureaucrats. There are multiple dimensions to the relationship between bureaucrats and the private sector and one key area for further research concerns what functions bureaucrats and government perform relative to the private sector. For example, the privatisation of utilities and the collaboration between bureaucrats and the private sector in the provision of infrastructure is relevant to the growth trajectories of developing countries but have received limited study. There is also the question of whether bureaucrats can serve as conduits of new ideas into the private sector, as has occurred in East Asia. This question has become more salient given a renewed interest in industrial policies across the developing world.

Finally, there are questions around whether bureaucrats can innovate and adapt to future challenges. The COVID-19 pandemic has uncovered large heterogeneity in the capacity of bureaucracies to respond. If we think about future challenges, such as climate change, it is clear that one needs to identify what characteristics of bureaucracies are needed to respond to these key challenges developing countries will face which may be different to the challenges faced in the last century. There seems to be a whole set of issues that surface around how innovative bureaucracies are in using up to date knowledge to face current and future challenges.

Viewing the effectiveness of bureaucracy through the lens of organizational economics thus provides a link between the body of micro-level studies and macro questions about how bureaucracies affect economic development. There is also scope for forming better connections across disciplines. Economic approaches are powerful but capturing the richness of motivation, the role of norms and identity are areas where there is scope for studies that combine insights from multiple disciplines. Moreover, there appears to be a disconnect between the emerging literature in economics and the work in the field referred to as "Public Administration".

Had we written this review twenty years ago, we would have found relatively few studies

of bureaucracy and development within economics to draw on. This has changed significantly as economics has embraced the use of field experiments and detailed administrative data to study the motivation and performance of bureaucrats. However, there remain many unanswered questions and issues where our understanding is quite limited, particularly when we are trying to study large reforms of bureaucratic systems which involve multiple interdependent dimensions. We therefore hope that the next twenty years will make significant progress towards understanding how to create and sustain bureaucratic systems that encourage economic development.

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6 Figures and Tables

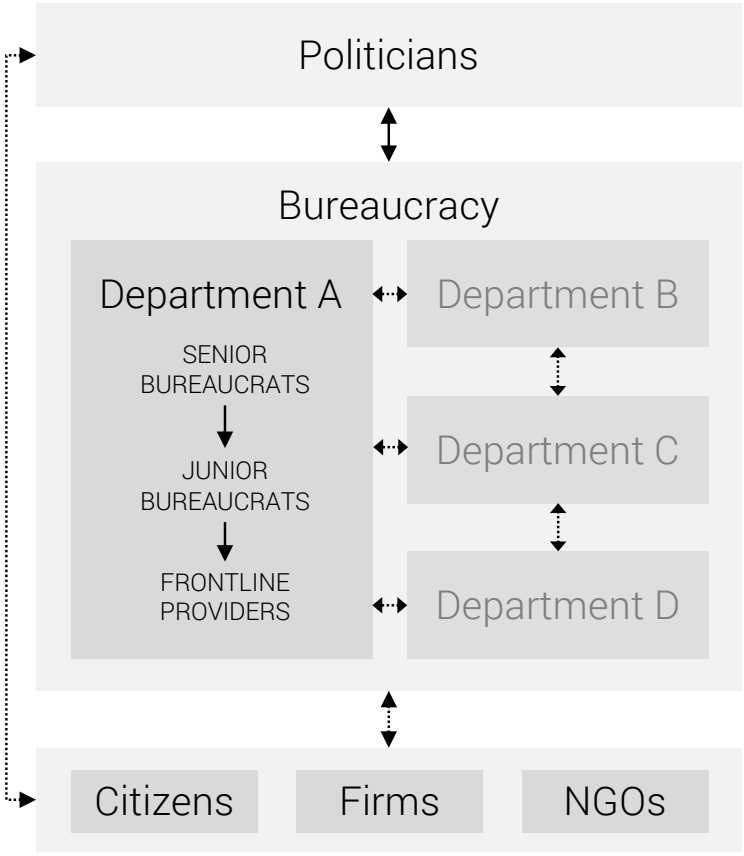

Figure 1: Figure shows a stylized bureaucracy with multiple departments and levels of hierarchy. Solid lines show "traditional" principal-agent relations studied in personnel economics. Dotted lines show relations between systems (between different departments within the bureaucracy, or between politics, the bureaucracy, and civil society).

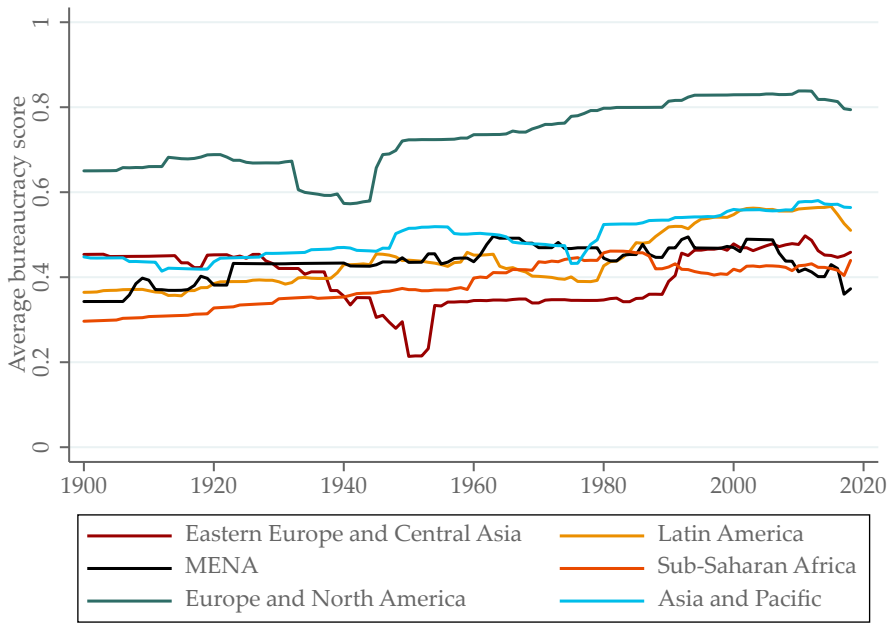

Figure 2: Bureaucracy score (normalized average of the Meritocracy and Rigorous and impartial administration index) for a balanced panel of countries observed throughout the entire time period.

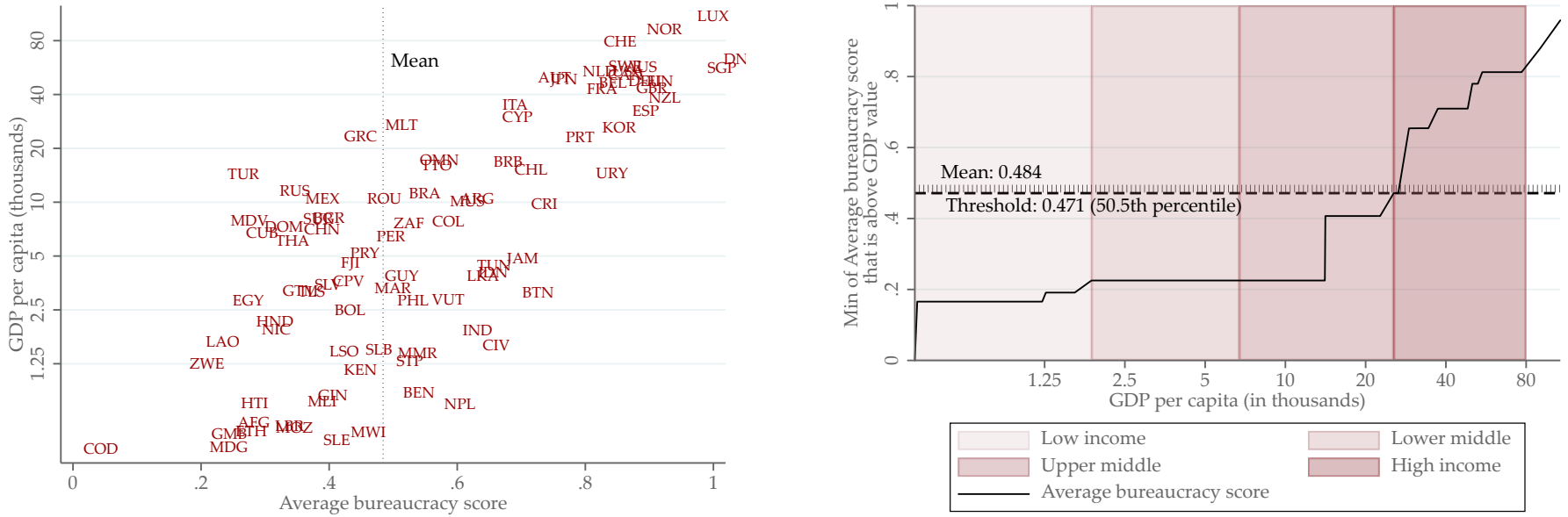

Figure 3: The left panel shows the cross-sectional relationship between (log) GDP per capita and the average bureaucracy score (normalized average of the Meritocracy and Rigorous and impartial administration index) in 2016. The right panel shows for any given GDP per capita value the lowest observed bureaucracy score of all countries with a higher GDP per capita.

Table 1: Bureaucracy score and economic growth

	Outcome: Log of GDP per capita				
	(1)	(2)	(3)	(4)	(5)
Lag (Meritocratic recruitment)	0.025**		0.023*		
	(0.012)		(0.012)		
Lag (Rigorous and independent administration)		0.013	0.004		
		(0.011)	(0.012)		
Lag (Avg. Bureaucracy score)				0.024*	0.041**
				(0.013)	(0.016)
Observations	1,602	1,634	1,602	1,634	1,634
Lag(Log GDP per capita)	✓	✓	✓	✓	✓
Country FE	✓	✓	✓	✓	✓
Year FE	✓	✓	✓	✓	✓
Country FE × Linear trend					✓

Table 1: All regressions include country and year fixed effects. The independent variables are standardized to have mean zero and a standard deviation of one. Standard errors are clustered at the country level. Sample is collapsed to five-year means and control for the lagged (log) GDP per capita.