Governance, bureaucratic rents and well-being differentials across US states

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Abstract

We analyse the influence of institutional restrictions on bureaucratic rents. As a measure for these rents, we propose subjective well-being differentials between workers in the public administration and workers in other industries. Based on data for the US states, we estimate the extent to which institutional efforts to strengthen bureaucratic accountability affect differences in well-being. We find that well-being differences are smaller in states with high transparency, elected auditors, and legal deficit carryover restrictions. These findings are consistent with limited rent extraction under these institutional conditions. No or weak effects are found for performance audits and regulatory review.

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1. Introduction

We study how effectively government institutions in US states restrict public administrators in the pursuit of private interests and the acquisition of rents. Specifically, we address how alternative fiscal transparency regimes, selection rules and mandates of state auditors, balanced-budget laws, and restraints to administrative rule-making affect the rents of public servants. As a direct measure for rents, we exploit differences in the reported subjective well-being of employees in the public administration and employees in other industries. This measure has been introduced and applied in a cross-country framework by Luechinger *et al.* (2008). Using data from the National Survey of Families and Households, we estimate interaction effects between institutional restrictions and the status of being employed in the public administration. The interaction effects capture well-being differences that systematically correlate with governance institutions. In our main analysis for the years 1992-4, we find that in US states with high transparency regimes, elected auditors, and balanced-budget laws the difference in subjective well-being between employees in the public administration and employees in other industries is substantially smaller. The findings are consistent with limited rent extraction under these institutional conditions. We find no correlation of the subjective well-being differentials with performance audits and sometimes weak negative correlations with regulatory review by the legislature and independent commissions. The results are robust to various changes in the specification and sample. However, one caveat should be mentioned upfront: We cannot replicate our results in a smaller sample and a smaller set of states for the years 1987-8.

Section 2 presents the theoretical considerations on the role of specific democratic institutions for bureaucratic rents. Section 3 explains the empirical strategy and Section 4 describes the data. The results of our main empirical analysis as well as the robustness checks and the extensions are reported in Section 5. Section 6 concludes.

2. Institutions and Bureaucratic Rents

The sovereign authority of the public bureaucracy in providing public services offers employees in the public administration the opportunity to generate rents. In contrast to a model of a benevolent bureaucracy, a political economy view predicts that public administrators will acquire those rents and protect them against dissipation. Moreover, the pursuit of rents does not simply lead to transfers. As the extraction of rents often involves investments of valuable resources, there are fewer resources available for productive economic activity, entailing pareto-inferior outcomes. Opportunities for bureaucratic rent-

seeking are manifold and tied to the several tiers of principal-agent relationships between individual employees, managers, elected officials, and voters. First, the multiplicities of principals, tasks, and tiers of management and front-line workers characterizing government bureaus hamper the use of explicit incentives for aligning the interests of individual public servants and their superiors (Dixit 2002). Moreover, output is difficult to measure because of its non-market nature. These aspects of the organizational structure in the government sector enable subordinates to renege on public work effort in order to pursue personal goals, giving them higher utility than when strictly pursuing agency goals. Second, informational asymmetries give administrators considerable discretion vis-à-vis the legislature, which allows them to pursue their own goals via budget and slack maximization (Niskanen 1971). Finally, public agencies are responsible for rulemaking and policy implementation, making them attractive targets for rent-seeking activities and enabling them to sell property rights created by legislation.

To organize ideas and to motivate our empirical approach, we set up a very simple framework which captures the basic features of our empirical strategy. Bureaucrats can use their budget (public funds) B to provide public goods G and to finance rents $R = B - G$. Rent seeking is discovered with probability $\pi \in [0,1)$, in which case bureaucrats get no rent but need to pay a penalty P. The probability π is increasing with better observability of the agent due to *e.g.*, tighter transparency and supervision standards. Hence, π might be seen as a proxy for such institutions. The citizens' payoff is $u(G)$ and the bureaucrats' payoff is $w(G,\ R) = \alpha u(G) + (1-\alpha)(1-\pi)v(R) - \pi P$, where $u'(G) > 0,\ u''(G) < 0,\ v'(R) > 0,\ v''(R) < 0$.

The bureaucrats' maximization problem is: $\max_G w(G, 1-G)$. The first-order condition is $\alpha u'(G) - (1-\alpha)(1-\pi)v'(R) = 0 \Leftrightarrow u'(G) = \frac{1-\alpha}{\alpha}(1-\pi)v'(R)$. Assuming an interior solution, it follows from this first-order condition and the concavity of $u(G)$ and $v(R)$ that the optimal public goods provision G^* is unique and increasing in α and π. The optimal rent $R^* = B - G^*$ must thus be decreasing in α and π. Hence, better institutions lead to higher public goods provision and less rent seeking.

The empirical analysis in the paper focuses on subjective well-being differentials which proxy for the utility differential $\Delta(G,R) \equiv w(G,R) - u(G) = (1-\alpha)[(1-\pi)v(R) - u(G)] - \pi P$. It follows from the above results that $\Delta(G^*)$ must be decreasing in π. Hence, this simple static framework predicts that better institutions lead to a lower utility differential between public administrators and citizens.

We identify four major institutions that are expected to affect the probability of detection π and might thus help aligning the incentives of employees in the public administration with citizens' preferences. The institutions aim at reducing information asymmetries or at strengthening politicians' incentives and ability to control the public administration.

2.1 Fiscal transparency

Information asymmetries in the democratic decision-making process are a major obstacle to holding public servants accountable. Proposed remedies are stricter transparency requirements mandating information disclosure as well as the subsequent review of such disclosed information by public auditors (see below for the latter aspect). Increased transparency involves the disclosure and access to reliable, comprehensive, and timely information and allows the legislature and other stakeholders to better observe the workings of government. In general, the beneficial effects of transparency requirements stem from the improved predictability and credibility of political processes. However, there are also counterarguments asserting that transparency inhibits politicians and public servants from taking productive risks and breaking promises in the interest of political expediency as more decisions become politicized (for a discussion, see Alt *et al.* 2006). Previous empirical evidence supports the favourable effects of increased transparency. Stricter transparency requirements are associated with lower levels of debt accumulation (Alt and Lassen 2006a) and smaller political deficit cycles (Alt and Lassen 2006b).

Hypothesis 1: Higher fiscal transparency increases the probability of detection of rent-seeking behaviour which reduces the discretion of public administrators in the allocation of funds and thus rents in their industry.

2.2 Public auditors

Transparency requirements are ineffective if the disclosed information is not accurate or timely. It is therefore important that they are backed by independent review. The review of financial information is usually conducted by independent public auditing institutions. These are mandated to verify and certify the financial statements that are prepared by the bureaucracy and issued by the government. If the audits are of poor quality or the auditor is not independent from the government, financial statements lose credibility (*e.g.*, Schelker 2008).

Auditors typically conduct financial audits, in which they scrutinize financial statements. Recent randomized field experiments show that independent financial audits reduce

corruption (Olken 2007) and influence electoral decisions (Ferraz and Finan 2008). However, some auditing institutions also conduct various forms of performance audits to ensure efficient policy implementation. With this extended mandate, audits cover a wider range of government activities. In a study analysing US state auditors, Schelker (2012) finds evidence that performance audits improve government general obligation bond ratings.[1]

Hypothesis 2a: Auditors with a supplementary mandate to conduct performance audits review a wider range of government activities. Such mandates improve the quality of information available to the principal and, thus, reduce information asymmetries and bureaucratic rents.

The effectiveness of audits also depends on the auditors' incentives to reveal inconsistencies. In Tirole's (1986) three-tier principal-agent model in which a principal hires a supervisor to control the agent, the main danger arises where the supervisor and the agent collude. In theory, the principal will aim at implementing collusion-proof contracts. A first step towards reducing the risk of collusion is to keep the auditor institutionally independent from government agents, most notably from the executive and the bureaucracy, eliminating direct channels for side-payments and reciprocal behaviour. Auditor independence is thus influenced by the appointing and dismissal procedures (*e.g.*, Maskin and Tirole 2004; Schelker 2008).

Hypothesis 2b: Elected auditors have strong electoral ties to the principal - the citizens - and are less likely than appointed auditors to collude with the agents - the public administrators. Their independence allows effective reviewing of publicly disclosed information, thereby reducing information asymmetries and bureaucratic rents.

2.3 Balanced-budget rules

Fiscal rules aim at restricting the government in the budget process and are a general response to many agency problems identified in political economics. Many countries, and virtually all US states, apply fiscal rules that restrict expenditure behaviour and the issuing of sovereign debt. The various balanced-budget rules applied in this context differ widely: They allow borrowing over one or more fiscal years, apply to the entire budget period or only a part of it, and are combined with more or less formal provisions that enforce them (*e.g.*, Poterba 1994). Previous evidence indicates that fiscal rules systematically affect fiscal outcomes. Stringent balanced-budget laws contribute, for example, to lower public deficits and to faster reactions to income shocks, thus smoothing budget surpluses and deficits (Alt and Lowry 1994; Poterba

[1] Extending the audit mandate even further to include also *ex ante* audits of the budget draft and individual policy proposals leads to significantly lower taxes and expenditures (Schelker and Eichenberger 2010).

1994). More stringent balanced-budget rules restrict a government's ability to carry deficits to subsequent budget periods and, hence, its scope to allocate funds over time.

Hypothesis 3: Stringent balanced-budget rules harden the budget constraint and raise a government's incentive to monitor the bureaucracy's use of public funds, thus reducing the potential abuse of funds.

2.4 Restraints to government rule making

Government agencies have the competence to set rules and regulations in many important policy areas, from environmental protection and public health to banking regulation and transportation. While the discretion that administrative agencies have provides them with the flexibility to respond to new challenges, it also allows them to pursue private interests, and to give in to offers from regulated industries. In order to hold agencies responsive and accountable, many jurisdictions introduce specific procedures for reviewing new regulations.

The US states record the rule-making procedures in their State Administrative Procedure Act. Government agencies are bound by various degrees of restraint in their rule-making authorities (Grady and Simon 2002). We concentrate on the political actors that constrain agencies, *i.e.*, the governor's office or its designee, the office of attorney general, the legislature, including both the committee system and the full body, and an independent rules review entity. We are not aware of any systematic empirical work on the consequences of a more or less strict regulatory review process.

Hypothesis 4: The stricter the control of administrative rule-making is by any of the several involved political actors, the lower are rents in the public administration.

Hypothesis 4 does not take into account the tendency for opposing interests to exist between the executive branch and the legislator in a presidential system. Opposing interests induce legislators to adopt proactive measures in order to protect their interests within the bureaucracy. Legislators impose detailed rules of procedure (including regulatory reviews), which cannot be easily altered by the executive. This, however, has the overall effect of obstructing a bureaucracy's political control mechanisms and undermines the positive effect of regulatory reviews stated in Hypothesis 4.

2.5 Other potential determinants of rents

There are several other potential determinants of well-being differences between industries. We concentrate on socio-economic factors, political preferences, and factors related to the political process.

The socio-economic determinants refer to state income, population size, and unemployment. The *per capita* income level in a state is a proxy variable for many factors affecting political governance such as an educated citizenry or social capital, but also the level of available resources that can potentially be transferred between sectors. A state's population measures the number of people who have to be administered and, thus, reflects the magnitude of the organizational problem from which public administrators might benefit. Due to the higher job security of employees in the public administration relative to other industries any difference in subjective well-being is expected to depend on the state of the economy (Luechinger *et al.* 2010).

Subjective well-being in the public administration might also depend on the population's attitudes towards the state's active role in various areas of life. It is conceivable that people's political attitudes are, in fact, responsible for the degree of restraint imposed on a bureaucracy. In advance of the empirical analysis, note that, when we take a state's political orientation into account (as measured in terms of the political position of the elected state representatives), we implicitly control for the correlated institutional factors that we have omitted as separate variables. A further extension of our analysis focuses specifically on citizens' trust in state governments.

Finally, current political factors such as electoral competition and binding term limits might affect elected officials (short term) incentives to control the public administration. Moreover, if unions are an effective way to organize the interests of public administrators, they may assist in the generation and protection of rents. Unions seem to be effective in shielding its members from wage adjustments, general cut-backs in public employment, or from employment reductions due to privatization of state services (*e.g.*, Lopez-de-Silanes *et al.* 1997; Blanchflower and Bryson 2004). These latter aspects are subject of a supplementary extension of our main analysis.

3. Empirical Strategy

We approximate rents by the difference in reported subjective well-being between workers employed by the public administration and workers in other industries.[2] This approach has been introduced in Luechinger *et al.* (2008).

Focusing on subjective well-being allows us to capture the total net benefits of a position in the public administration and to account for benefits beyond the respective job such as better access to public services or generous pension benefits. This distinguishes our approach from previous research on job satisfaction of public and private sector employees (*e.g.*, Heywood *et al.* 2002).

To assess how the difference in subjective well-being between workers in the public administration and other industries (as a proxy for $\Delta(G,R)$) are related to the institutional factors, we estimate variants of the following empirical model:

$$\begin{aligned} SWB_{ij} = {} & \beta_0 + \beta_1 \cdot 1(Public\ admin)_{ij} + \beta_2 \cdot 1(Public\ admin)_{ij} \cdot \left(\boldsymbol{IC_j} - \overline{\boldsymbol{IC}}\right) \\ & + \beta_3 \cdot \left(\boldsymbol{IC_j} - \overline{\boldsymbol{IC}}\right) + \beta_4 \cdot \left(\boldsymbol{Z_{ij}} - \overline{\boldsymbol{Z}}\right) + \beta_5 \cdot 1(Public\ admin)_{ij} \cdot \left(\boldsymbol{X_j} - \overline{\boldsymbol{X}}\right) \\ & + \beta_6 \cdot \left(\boldsymbol{X_j} - \overline{\boldsymbol{X}}\right) + \varepsilon_{ij}\ , \end{aligned} \tag{1}$$

where SWB_{ij} is the subjective well-being of individual i living in state j, $1(Public\ admin)_{ij}$ is a dummy variable that takes on the value 1 if the respondent is employed in the public administration and 0 otherwise, $\boldsymbol{IC_j}$ is the institutional variable of interest, and $\boldsymbol{Z_{ij}}$ and $\boldsymbol{X_j}$ are vectors of individual and state level controls, respectively.

The individual level control variables $\boldsymbol{Z_{ij}}$ capture personal characteristics such as sex, age, education, marital status, ethnicity and religious orientation. Income is not included as control variable, because it may be an important channel through which rents are appropriated.[3] If these job characteristics were held constant, the pervasiveness of any rent in the public administration would be underestimated. The state-level control variables $\boldsymbol{X_j}$ capture the income level in the state, its population, the rate of unemployment and a proxy for political orientation (*i.e.*, ADA score). All institutional and control variables are expressed as deviations from their mean: $\boldsymbol{IC_j} - \overline{\boldsymbol{IC}}$, $\boldsymbol{Z_{ij}} - \overline{\boldsymbol{Z}}$, and $\boldsymbol{X_j} - \overline{\boldsymbol{X}}$. The coefficient of the constant term, β_0, can thus be interpreted as the subjective well-being of the average individual living

[2] Recent economic analyses based on data on subjective well-being include, e.g., Deaton (2012) and are reviewed, e.g., in Stutzer and Frey (2010). For studies on the effect of institutional and political factors on subjective well-being see, e.g., Frey and Stutzer (2000, 2005) and Dreher *et al.* (2010).

[3] As we discuss in Section 5, the results are robust to the inclusion of log income.

in a state with average characteristics, if he or she were to work in the private sector. The coefficient β_1 measures the average difference in subjective well-being between a person employed in the public administration and a person employed in any other industry.

The main coefficient of interest is β_2. It indicates how much smaller or larger the differential in subjective well-being for employees in the public administration is, if some specific institutional conditions are in place or are more pronounced. The pure level effect of institutional conditions is reflected in coefficient β_3.

The effects captured by β_1, β_2, and β_3 are subject to different identification challenges. The average difference in subjective well-being between public administrators and employees in other industries β_1 is biased to the extent that people self-select into the public administration based on unobserved characteristics that are correlated with their reported subjective well-being (Luechinger *et al.* 2006). The institutional level effect captured with β_3 is biased to the extent that other state characteristics (which affect subjective well-being, but are not included in the estimation equation) are correlated with the specific institutional factors. Therefore we concentrate on β_2. The interaction term identifying β_2 can be interpreted as an application of a differences-in-differences estimator. Independently of any general difference in subjective well-being between industries and any general correlation between institutional conditions and subjective well-being, the interaction term identifies any systematic variation in the well-being differences across states that is correlated with institutional conditions. Since we cannot rigorously identify the level effects of institutions on subjective well-being, we cannot rule out that institutional constraints make bureaucrats unhappy without making anyone else happier.

To assess the robustness of our estimates, we control for unobserved state specific heterogeneity by including state effects, we evaluate the sensitivity of our results by excluding individual states from the estimation, we include additional covariates to assess potential concerns related to omitted variable bias, and we extend our analysis to address further political factors which might affect the relevant utility differentials. Throughout, we use a robust estimator of variance that allows for clustering at the state level.

4. Data

The data including information on people's subjective well-being as well as individuals' industry and a range of individual level control variables come from the National Survey of Families and Households (NSFH) (Sweet *et al.* 1988; Sweet and Bumpass 1996). The NSFH

is a survey of a nationally representative sample with three waves of data collection (1987-8, 1992-4, and 2001-8). Our main analysis is based on the second wave, which has complete data for the largest cross-section sample of all the three waves; the second wave interviews first-wave main respondents and their current and their first-wave spouses (if the latter two are not the same). We use data from the first wave to assess the robustness of our findings of the institutional variables that are available for the late 1980s; we cannot use third wave data because the third wave does not contain geographical information.

In the second wave of the NSFH, over 16,000 individuals were interviewed. After restricting the sample to respondents who report their subjective well-being and the industrial sector of their current employment and to individuals with non-missing values for the control variables, as well as after having excluded respondents from the District of Columbia, our sample contains data for 7,444 individuals. Individuals from all US states, except North Dakota (due to missing data), are included in the sample.

The NSFH elicits subjective well-being with the following question: 'Next are some questions about how you see yourself and your life. First, taking things all together, how would you say things are these days?' Individuals are asked to state their well-being on a scale from 1 (very unhappy) to 7 (very happy). The dummy for employment in the public administration is created on the basis of the respondent's industry; it encompasses elected offices and positions in the public administration.[4]

Individual level controls are sex, age, race, marital status, religion, and the log of years of education. Based on the theoretical ideas outlined in Section 2, we add state-level variables on transparency, auditors, balanced-budget provisions, regulatory review, and a series of control factors.

Fiscal transparency: An index proposed by Alt *et al.* (2006) is used to measure transparency. The index includes nine dimensions: (i) Is the budget reported according to GAAP standards? (ii) Are multi-year expenditure forecasts prepared? (iii) What is the frequency of the budget cycle? (iv) Are the revenue forecasts binding? (v) Does the legislative branch have (or share) responsibility for the revenue forecasts? (vi) Are all appropriations included in a single bill? (vii) Does a nonpartisan staff write appropriation bills? (viii) Is the legislature prohibited from

[4] The public administration variable encompasses the following industry codes: executive and legislative offices (900), general government, n.e.c. (901), justice, public order, and safety (910), public finance, taxation, and monetary policy (921), administration of human resources programs (922), administration of environmental quality and housing programs (930), administration of economic programs (931), national security, and international affairs (932).

passing open-ended appropriations? (ix) Does the budget require published performance measures? The overall index (available on an annual basis) is a state's average score over all available sub-measures.[5] In 1993, the index is lowest for Indiana (with a value of 0.11) and highest for Utah (with a value of 0.89).

State auditing institutions: We use two measures to capture a state auditor's mandate and independence as proposed by Schelker (2008, 2012). Auditor independence is captured with an indicator variable taking value 1 if the chief auditor is elected by the citizens and the value 0 if he or she is appointed by either the legislature or the executive. In 1993, seventeen US states featured elected chief auditors. The variable performance audits is an index capturing whether the mandate includes economy and efficiency audits, program audits, and compliance audits, which all target the use of public funds. Whenever a form of audit is part of the mandate, the index is increased by one unit, thus ranging from 0 to 3. The average score across the US states is 1.62 for 1993.

Balanced-budget provisions: Our main measure captures the strictest form of balanced-budget requirement, which is a restriction to carryover deficits to the next budgetary period. The indicator stems from Alt and Lowry (1994) and takes a value of 1 if the government is not allowed to carryover a deficit to the next period, and 0 if otherwise. Twenty-four states featured the strictest form of balanced-budget rule in the United States in 1993. Weaker forms of balanced-budget laws require that the governor submits a balanced-budget, where failing this requirement, the legislature must enact a balanced-budget, while actual deficits can be carried over to the next period simply by borrowing. In a robustness test we also use an index variable capturing the stringency of the balanced-budget rule (ACIR 1987). The index ranges from 0 to 10 with higher values indicating stricter balanced-budget requirements. Note that in many cases balanced-budget rules have been installed already in the original state constitutions and did not significantly change over time. Bohn and Inman (1996) examined all state statutes on budget rules back to 1970 and did not report any significant changes up to 1994. Balanced-budget rules thus do not reflect reactions to recent negative fiscal shocks.

Regulatory review: The control of administrative rule-making is defined in the state administrative procedure acts. Four indices measure the restraints embodied in these acts both *de jure* and *de facto* on state government agencies in the mid-1990s. The indices have been constructed by Grady and Simon (2002), based on information provided by the actors

[5] The following states lack information on one or two dimensions: GA, KS, KY, LA, MN, and MT (one dimension missing) and MA and VT (two dimensions missing). For more details, see Alt *et al.* (2006).

involved in regulatory review and oversight. The four indices are related to the four actors with potential formal power over agencies' rule-making discretion. These are the governor's office or its designee, the office of the attorney general, the legislature (including both the committee system and the full body), and an independent rules review entity. The indices can take values between 0 and 8. Regulatory review is least pronounced in Mississippi, which is indicated by an average index value of 0.50; regulatory review in Maryland is most pronounced, indicated by an average index value of 4.75.

Control variables: In all regressions we include a state's real *per capita* income, the state population in logs, ADA scores, and the state unemployment rate in levels and interacted with the dummy for public sector employment as additional control variables. ADA scores proxy political preferences within the electorate of a state (Anderson and Habel 2009). The measure relies on the average of the state representatives' ideological position on a conservative-liberal scale ranging from 0 to 100. The most conservative state in 1993 is Wyoming with a score of 6.42. The most liberal state is Hawaii with a score of 87.57.

Table 1 presents summary statistics for the dependent variable as well as the industry and state level variables included in our analysis for the sample in our baseline regressions. A full list with all the individual level control variables is reported in the online appendix.

<Table 1 about here>

5. Results

5.1 Baseline Results

Table 2 reports the baseline regressions using information from the second wave of the NSFH from 1992-4. Odd numbered columns present models of the form of eq. (1) with state-level controls, even numbered columns further include state effects in order to control for unobserved time-invariant state-specific heterogeneity. To assess the influence of institutional restrictions on bureaucratic rents, we focus on the relevant interaction effects. Columns I to VIII include individual sets of institutional restrictions. An increase in accountability through strict fiscal transparency rules, the election of state auditors, and stringent balanced-budget rules is statistically significantly associated with a smaller well-being differential for the public administration. A one standard deviation increase of transparency lowers the reported subjective well-being of public administrators relative to other workers by 0.145 points. If the chief auditor is elected rather than appointed, the difference is reduced by 0.276 points. A no-carryover rule is related to a 0.443 points lower difference. As a robustness test, we also use

an alternative measure of budget rules, *i.e.* the ACIR balanced-budget rules stringency index.[6] Consistent with our main result, the estimated effect is negative, though only weakly statistically significant (coef.: -0.037, std. err.: 0.021). A one standard deviation increase of the index reduces the well-being differential by 0.093 points. Overall, our results are consistent with the Hypotheses 1 (transparency), 2b (elected auditors), and 3 (balanced-budget rules). They do not support hypotheses 2a (performance audits) and 4 (regulatory review). Performance audits are not significantly correlated with the differences in subjective well-being. The same holds for the variables capturing the limited discretionary rule-making power of civil servants.

So far the individual sets of institutional restrictions were analysed under an implicit ceteris paribus assumption (or that all other institutional factors are orthogonal to the ones under study). However, institutions of fiscal transparency and budget rules might well be correlated and thus capture related aspects of fiscal accountability. In particular, the index of transparency in the fiscal process is a composite measure capturing important aspects of all stages of the budget process. The broadness of the measure allows a comprehensive evaluation of fiscal transparency, but at the same time it makes it more likely that some aspects are partly captured by other variables as well.

To find the institutional factors that have an independent influence on the well-being differentials, columns IX and X include all institutional variables simultaneously. The effects of elected state auditors and strict balanced-budget laws are again negative and statistically significant. Moreover, the effects are comparable in size to the previous estimates. In contrast, the effect of fiscal transparency collapses indicating a correlation between institutions that foster fiscal accountability. In the case of rule-making restraints, the estimated coefficients remain comparable in size to the previous (insignificant) estimates. However, the estimated effects of rule-making restraints imposed by the legislature as well as independent commissions become (marginally) significant. A one standard deviation increase of the variables capturing rule-making restraints reduces the reported subjective well-being differential by 0.092 in case of the legislature and by 0.100 in case of independent commissions.

<Table 2 about here>

[6] We give priority to the no-carryover rule because previous research has shown that this most stringent budget rule has the most important influence on fiscal outcomes (Poterba 1994; Bohn and Inman 1996). A detailed regression output is reported in Table A.3. of the online appendix.

An interpretation of the basic difference between public administrators and workers in other industries is difficult as we cannot control for self-selection into the different industries. We are also reluctant to interpret the cross-section correlations between institutions and the level of subjective well-being as they might well be biased due to unobserved correlated factors.

Institutional factors might be systematically related to political preferences of the electorate, to economic performance or to the size of the state. Therefore, we include state ADA scores, the unemployment rate, state income, and population as well as the corresponding interactions with employment in the public administration in the estimations. In states where more liberal politicians are elected to congress, a smaller difference is observed. If ADA scores increase by one standard deviation, any well-being premium of public servants is reduced by between 0.111 and 0.194. None of the economic factors is significantly related to the reported subjective well-being difference. However, in larger states, the subjective well-being difference between public administrators and other workers is significantly larger. A 10 % increase in population size is related to an increase in the well-being differential of approximately 0.015 to 0.023.

For the individual level control variables, the results qualitatively correspond with the findings in Luttmer (2005) for the same dataset.[7]

5.2 Robustness

In the following robustness checks we assess various sources of potential bias. First, we include personal income as a regressor in our empirical model. Second, we evaluate the sensitivity of our results by excluding individual states from the sample. Third, we discuss potential endogeneity issues. Forth, we discuss results based on the first wave with a smaller overall sample and a smaller sample of states, pooled estimates including both the first and second wave, and finally the second wave but restricted to the smaller sample of states from the first wave.

In our baseline specifications we do not include personal income as a regressor because it may be an important channel through which rents are appropriated. If we include log income as an additional control variable at the individual level, the results are virtually identical. For the specifications II, IV, VI, and VIII including state effects and extended with log income, the coefficients of the interaction terms with public administration are -0.807 (std. err.: 0.297) for

[7] A detailed regression output for the specifications in Table 2, including the coefficients for all individual level control variables, is reported in Table A.2. of the online appendix.

transparency, -0.278 (std. err.: 0.123) for elected auditors, 0.024 (std. err.: 0.052) for performance audits, -0.437 (std. err.: 0.100) for no-carryover rules, -0.001 (std. err.: 0.020) for governor restraints, 0.007 (std. err.: 0.038) for attorney general restraints, -0.037 (std. err.: 0.034) for legislative restraints, and -0.029 (std. err.: 0.026) for independent commission restraints.

To further assess the sensitivity of our results, we repeat our baseline regressions and exclude one state at a time. Table 3 reports the resulting lower and upper bound estimates along with the estimates for the full sample from Table 2. Overall, the results are robust to the exclusion of individual states. The size of the coefficients for transparency, elected auditors and no-carryover rules are relatively stable, and all estimates remain significant at conventional levels. The estimates for rule-making restraints are rather sensitive to the exclusion of individual states: The upper bound estimates exceed lower bound estimates by a factor of approximately 4.1 and 6.1 respectively. For the sake of brevity, we omit the estimates from dimensions other than legislative restraints and independent commission restraints, which at least in some specifications of Table 2 indicate systematic correlations.

<Table 3 about here>

Recall that our identification is based exclusively on the interaction effects and is as such an application of a differences-in-differences strategy. We do not rely on general well-being differences between industries or direct correlations between institutions and reported well-being, but only on well-being differentials conditional on the institutional setup. Therefore, we can control for general unobserved state-specific heterogeneity by including state effects. However, one might still worry that some unobserved factor drives both the utility differential as well as institutions. One such candidate is political preferences of voters. We try to address this concern by including political preference measures (ADA scores) already in the baseline regression. Another candidate is the status of the public bureaucracy. If voters perceive the bureaucracy as competent and trustworthy, public administrators might be happier and at the same time voters might be less inclined to control the bureaucracy. We address this concern by controlling for the share of respondents indicating 'a great deal' or 'a fair amount' of trust and confidence in the state government in a Gallup/ACIR (1992) survey.[8] The partial correlation between trust and the subjective well-being differential is positive, statistically

[8] The survey by Gallup/ACIR (1992) is the only survey with specific questions on trust in state government in the relevant period. The question reads: 'Overall, how much trust and confidence do you have in your state government to do a good job in carrying out its responsibilities? 'A great deal', 'A fair amount', 'Not very much', and 'None at all'.

significant, and ranges from 0.741 (std. err.: 0.317) to 0.978 (std. err.: 0.433). A one standard deviation increase in trust amounts to a 0.096 to 0.127 higher well-being differential. This is consistent with the view that there is a positive relation between the public's perception of the bureaucracy and potential utility premiums. More importantly, all our previous results are robust to the inclusion of this variable and the corresponding interaction term. The estimated interaction terms of our institutions with the public administration indicator are -0.742 (std. err.: 0.283) for transparency, -0.317 (std. err.: 0.125) for elected auditors, 0.013 (std. err.: 0.053) for performance audits, -0.450 (std. err.: 0.086) for no-carryover rules, 0.002 (std. err.: 0.022) for governor restraints, 0.020 (std. err.: 0.042) for attorney general restraints, -0.017 (std. err.: 0.037) for legislative restraints, and -0.026 (std. err.: 0.022) for independent commission restraints.[9]

An alternative approach to address endogeneity is to estimate instrumental variables (IV) regressions. However, in the context of political institutions it is extremely challenging to find valid instruments. Not only has there to be a strong relation between the endogenous covariate and the instrument in the first stage, but also the exclusion restriction has to be met. Given these difficulties, the literature suggests only an instrument for budget rules. Rueben (1997) uses the voter initiative to instrument budget rules. However, voter initiatives may well have a direct effect on public employees (*e.g.*, Matsusaka 2009). When we use the availability of voter initiatives as an instrument for balanced-budget rules, we do not find a significant correlation between no-carryover rules and the voter initiative in the first stage regression.

Our main results are based on the second wave of the NSFH, *i.e.*, for the years 1992-4. We prefer the second to the first wave, because (i) we have observations for all institutional variables, (ii) it is the larger cross-section, and (iii) it covers more states. Still, the variables on elected auditors, transparency, and no-carryover rules are also available for the years of the first wave, 1987-8, with a sample size of 6,152 and 42 states. With this smaller dataset and fewer states, previous results cannot be replicated. The estimated effects for the interaction terms between public administrators and transparency (coef.: 0.300; std. err.: 0.398), elected auditor (coef.: 0.133; std. err.: 0.217) as well as no-carryover rules (coef.: -0.157; std. err.: 0.199) are not statistically significant. The difference in the results is not due to the different coverage of states: Restricting the second wave regressions to the same sample of states of the

[9] Note that the survey only covers 39 states and that our results also remain robust to this restriction of the sample. The full set of results is reported in Table A.4. of the online appendix.

first wave (including state effects) does not materially affect the results.[10] The estimated coefficients of the relevant interaction terms are as follows: transparency -0.843 (std. err.: 0.297), elected auditor -0.278 (std. err.: 0.124), performance audits 0.024 (std. err.: 0.052), no-carryover rule -0.436 (std. err.: 0.098), governor restraints 0.001 (std. err.: 0.020), attorney general restraints 0.008 (std. err.: 0.038), legislative restraints -0.035 (std. err.: 0.034), and independent commission restraints -0.029 (std. err.: 0.025). We have no convincing explanation for the first wave results.

When pooling both waves, unsurprisingly, our results become weaker. The interaction term of no-carryover rules with public administration remains statistically significant (coef.: -0.297, std. err.: 0.089), while the interaction effects with transparency (coef.: -0.263, std. err.: 0.189) and elected auditors (coef.: -0.097, std. err.: 0.102) fall below conventional levels of statistical significance.[11]

5.3 Supplementary extensions

Our main interest is on basic political institutions. They shape longer-term factors that affect public administrators as explained in Sections 2.1 to 2.4 and summarized in Hypotheses 1-4. Sill, as discussed in Section 2.5, theoretical considerations also suggest current political factors such as political competition, last term effects, and unionization to affect the control of the public administration.[12] These additional hypotheses are tested in a series of regressions presented in Table 4, which include measures of political competition, for whether the governor faces a binding term limit and is a lame duck, and for public and private sector unionization.

<Table 4 about here>

The political competition variable stems from Besley *et al.* (2010) and is based on Ansolabehere and Snyder (2002). The variable combines election results of state executive offices including governors, lieutenant governors, secretaries of state, attorney generals, representatives at the US federal level, etc. The measure captures the average relative vote share of Democrats in state-wide electoral races and is constructed as the negative absolute difference between the vote share and 0.5. The regression results in column I show a negative and statistically significant coefficient of the interaction term between political competition and public administrator. One standard deviation stronger political competition is associated

[10] See Table A.5. of the online appendix.
[11] See Table A.6. of the online appendix.
[12] We thank an anonymous reviewer for these suggestions.

with a 0.081 point lower subjective well-being differential. This is consistent with the interpretation that stronger political competition leads to stronger incentives to control public administrators.

The incentives of the executive, which is the direct principal of the bureaucracy, might also affect rent creation in the public administration. The literature in political economy has shown that executives who face a binding term limit (*i.e.* lame ducks) implement different policies than executives with intact electoral incentives (*e.g.* Besley and Case 1995; List and Sturm 2006). Besides these last term effects, it is important to also control for the general effect of term limits, because the existence of term limits can have independent effects on policy outcomes (Schelker 2011). In column 2, the estimated interaction terms between public administrators and lame duck governors or term limits respectively are not statistically significant. However, the direction of the effects accords with prior expectations.

Finally, we estimate the influence of unionization on subjective well-being differentials. We include both public and private sector unionization because our estimation strategy builds on both sectors. We use the union density measures by Hirsch *et al.* (2001) who estimate sector-specific shares of union membership and union coverage. Column 3 reports regression results relying on union membership, but the estimates are qualitatively equivalent when using union coverage instead. The estimated effects show that both relevant interaction terms are not statistically significant. The direction of the effects, however, would be consistent with the notion that unhappy bureaucrats are more likely to join unions.

6. Conclusions

Voters and elected officials delegate legislative and executive authority to bureaucratic agencies. This allows public servants to carry out their responsibilities. However, it also offers them an opportunity to exploit their monopolistic position and informational advantage to extract rents. Institutional reforms that strengthen accountability and reduce the discretionary leeway in the public administration can alleviate this well-known problem. Such reforms have gained a new urgency as cash-strapped governments in US states and around the world are forced to cut back spending. Adequate institutional reforms may provide a way of reducing spending without the need to reduce services by the same amount.

Our analysis sheds light on the promise of such reforms. The empirical results for the early 1990s suggest that transparency requirements, public auditors, and balanced-budget provisions are effective means for reducing bureaucratic rents. However, given our (partial)

failure to replicate the results for earlier years, it seems to be important to repeat the analysis for other countries and periods for which data is available.

Supplementary material

Supplementary material (the Appendix) is available online at the OUP website.

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Table 1. Summary statistics for the main variables

Variable	Mean	Std. Dev.	Min	Max
Subjective well-being	5.41	1.21	1.00	7.00
Public administration	0.06	0.24	0.00	1.00
Transparency	0.46	0.18	0.11	0.89
Elected auditor	0.26	0.44	0.00	1.00
Performance audits	1.92	1.15	0.00	3.00
No-carryover rules	0.49	0.50	0.00	1.00
Balanced-budget index	7.54	2.53	0.00	10.00
Governor restraints	3.43	2.60	1.00	8.00
Attorney general restraints	1.78	1.93	0.00	8.00
Legislative restraints	3.40	2.05	0.00	8.00
Ind. commission restraints	1.75	2.94	0.00	8.00
Ln(state income)	9.56	0.12	9.26	9.84
Ln(population)	15.74	0.88	13.05	17.26
Unemployment rate	6.64	1.38	2.60	10.80
ADA scores	46.93	13.42	5.43	87.57
Trust in state government	0.52	0.13	0.15	0.86
Political competition	-0.05	0.05	-0.23	-9.5e-4
Lame duck governor	0.19	0.40	0.00	1.00
Term limits	0.69	0.46	0.00	1.00
Public sector union density	36.73	17.92	8.30	72.60
Private sector union density	11.05	4.87	2.40	19.60

Notes: Summary statistics for sample in baseline regressions. N = 7,444. Summary statistics for the other individual level variables are reported in the online appendix.

Table 2. Institutions and public-private sector subjective well-being differentials

	I	II	III	IV	V	VI	VII	VIII	IX	X
Private sector						Reference group				
Public administration	-0.036	-0.039	-0.050	-0.054	-0.051	-0.053	-0.039	-0.043	-0.056	-0.060
	(0.057)	(0.055)	(0.055)	(0.054)	(0.049)	(0.048)	(0.060)	(0.058)	(0.039)	(0.038)
Public admin. x transparency	-0.845**	-0.818**							-0.058	-0.080
	(0.305)	(0.295)							(0.372)	(0.365)
Public admin. x elected auditor			-0.263*	-0.276*					-0.236*	-0.249*
			(0.123)	(0.124)					(0.099)	(0.098)
Public admin. x performance audits			0.028	0.025					0.038	0.025
			(0.053)	(0.052)					(0.051)	(0.051)
Public admin. x no-carryover rules					-0.441**	-0.443**			-0.410**	-0.397**
					(0.103)	(0.098)			(0.102)	(0.099)
Public admin. x governor restraints							-0.002	-0.001	-0.005	-0.003
							(0.021)	(0.020)	(0.017)	(0.016)
Public admin. x attorney general restr.							0.016	0.007	0.030	0.017
							(0.037)	(0.038)	(0.027)	(0.028)
Public admin. x legislative restraints							-0.036	-0.035	-0.045	-0.045(*)
							(0.034)	(0.033)	(0.028)	(0.026)
Public admin. x ind. commission restr.							-0.030	-0.029	-0.035(*)	-0.034(*)
							(0.026)	(0.025)	(0.020)	(0.020)
Transparency	0.028	-0.315							0.046	-0.325
	(0.074)	(0.735)							(0.079)	(0.707)
Elected auditor			0.017	-					0.017	-
			(0.028)						(0.026)	
Performance audits			-0.024*	-					-0.031*	-
			(0.011)						(0.013)	
No-carryover rules					0.015	-			0.001	-
					(0.033)				(0.031)	
Governor restraints							-0.004	-	-0.006	-
							(0.004)		(0.004)	
Attorney general restraints							-0.006	-	-0.012	-
							(0.006)		(0.008)	
Legislative restraints							-0.009	-	-0.009	-
							(0.005)		(0.006)	
Ind. commission restraints							-0.004	-	-0.004	-
							(0.004)		(0.004)	

To be continued.

Table 2, part 2.

	I	II	III	IV	V	VI	VII	VIII	IX	X
Public admin. x ln(state income)	0.800	0.546	0.020	-0.191	-0.154	-0.378	0.303	0.058	-0.333	-0.497
	(0.639)	(0.634)	(0.727)	(0.742)	(0.515)	(0.516)	(0.782)	(0.795)	(0.537)	(0.527)
Public admin. x ln(population)	0.169*	0.198*	0.217*	0.242*	0.159*	0.185**	0.213(*)	0.239*	0.163*	0.188*
	(0.082)	(0.085)	(0.105)	(0.106)	(0.067)	(0.067)	(0.111)	(0.114)	(0.070)	(0.070)
Public admin. x unemployment rate	0.021	0.009	-0.022	-0.034	-0.003	-0.014	-0.007	-0.024	-0.013	-0.030
	(0.039)	(0.041)	(0.041)	(0.041)	(0.033)	(0.032)	(0.052)	(0.054)	(0.036)	(0.037)
Public admin. x ADA scores	-0.016**	-0.014**	-0.009(*)	-0.008(*)	-0.014**	-0.013**	-0.009(*)	-0.008	-0.010(*)	-0.009(*)
	(0.005)	(0.005)	(0.005)	(0.005)	(0.004)	(0.004)	(0.005)	(0.005)	(0.005)	(0.005)
Ln(state income)	-0.346(*)	1.486	-0.288	1.409	-0.316	1.411	-0.299	1.389	-0.221	1.586
	(0.190)	(1.804)	(0.190)	(1.765)	(0.221)	(1.768)	(0.199)	(1.783)	(0.166)	(1.796)
Ln(population)	-0.015	5.103(*)	-0.007	5.012(*)	-0.016	5.137(*)	-0.024	5.019(*)	-0.017	5.179(*)
	(0.022)	(2.578)	(0.022)	(2.676)	(0.022)	(2.714)	(0.022)	(2.703)	(0.019)	(2.593)
Unemployment rate	-0.013	0.016	-0.013	0.019	-0.012	0.019	-0.017	0.017	-0.019	0.021
	(0.013)	(0.040)	(0.014)	(0.041)	(0.014)	(0.040)	(0.014)	(0.041)	(0.015)	(0.039)
ADA scores	0.002	-0.002	0.002	-0.002	0.002	-0.001	0.002	-0.002	0.002	-0.002
	(0.001)	(0.006)	(0.001)	(0.006)	(0.001)	(0.006)	(0.001)	(0.006)	(0.001)	(0.006)
Individual controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
State effects	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Constant	5.409**	5.409**	5.408**	5.409**	5.409**	5.409**	5.408**	5.409**	5.408**	5.409**
	(0.012)	(0.003)	(0.011)	(0.003)	(0.012)	(0.003)	(0.012)	(0.003)	(0.010)	(0.002)
Number of observations	7444	7444	7444	7444	7444	7444	7444	7444	7444	7444
Number of clusters	49	49	49	49	49	49	49	49	49	49
R squared/Adj. R squared	0.038	0.035	0.038	0.035	0.039	0.036	0.038	0.034	0.041	0.036

Notes: (1) OLS estimations; (2) robust standard errors in parentheses adjusted for clustering on state level; (3) ** is significant at the 99 % level; * at the 95 % level, and (*) at the 90 % level.

Table 3. Robustness test: Exclusion of individual states

Interaction term	Coef.	Rob. SE	
Public administration x transparency	-0.818**	0.295	
	-0.674*	0.309	lower bound
	-1.000**	0.275	upper bound
Public administration x elected auditor	-0.276*	0.124	
	-0.219(*)	0.116	lower bound
	-0.370*	0.145	upper bound
Public administration x no-carryover rules	-0.443**	0.098	
	-0.385**	0.091	lower bound
	-0.488**	0.094	upper bound
Public administration x legislative restraints	-0.035	0.033	
	-0.013	0.032	lower bound
	-0.053	0.034	upper bound
Public administration x ind. commission	-0.029	0.025	
restraints	-0.009	0.025	lower bound
	-0.055*	0.027	upper bound

Notes: (1) This table reports the smallest and the largest coefficients from repeated regressions with one state excluded at a time; for comparative purposes, the coefficients of the regressions for the whole sample are also shown; the regressions contain the same set of variables as the regressions in even columns of Table 2; (2) OLS estimations including state effects; (3) robust standard errors in parentheses adjusted for clustering on state level; (4) ** is significant at the 99 % level; * at the 95 % level, and (*) at the 90 % level.

Table 4. Extensions: Current political process and the subjective well-being differential of the public administration

	I		II		III	
	Coef.	Robust SE	Coef.	Robust SE	Coef.	Robust SE
Private sector			Reference group			
Public administration	-0.041	0.055	-0.044	0.056	-0.053	0.054
Public administration x political competition	-1.582*	0.684				
Public administration x lame duck governor			0.071	0.163		
Public administration x term limits governor			-0.197	0.142		
Public administration x public sector union density					-0.006	0.005
Public administration x private sector union density					-0.010	0.017
Political competition	-0.342	0.387				
Lame duck governor			-0.137*	0.058		
Term limits governor			0.023	0.090		
Public sector union density					-0.013	0.013
Private sector union density					0.018	0.035
Individual controls	Yes		Yes		Yes	
State controls	Yes		Yes		Yes	
State effects	Yes		Yes		Yes	
Constant	5.399**	0.006	5.409**	0.003	5.409**	0.003
Number of observations	7438		7444		7444	
Number of clusters	47		49		49	
Adj. R squared	0.034		0.034		0.035	

Notes: (1) OLS estimations; (2) robust standard errors in parentheses adjusted for clustering on state level; (3) ** is significant at the 99 % level; * at the 95 % level, and (*) at the 90 % level.