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Do Bureaucrats Contribute to the Resource Curse? Evidence from a Survey Experiment in New Oil States

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ABSTRACT *The resource curse literature argues that oil production reshapes the fiscal contract between citizens and the state: politicians become less responsive to citizen taxpayers and more likely to use public revenues for their own benefit. This paper examines whether and how bureaucrats influence this breakdown of the fiscal contract. Analysing results of a survey experiment conducted with government employees in Ghana and Uganda, we find that, when primed to think about oil revenue, bureaucrats do not generally express attitudes indicating that they contribute to the resource curse. Although oil revenue does lead some Ghanaian bureaucrats to become less interested in responding to taxpayers, this finding does not operate as predicted, i.e. by bureaucrats expressing greater partiality towards the ruling elite. Instead, we attribute this outcome to ‘disgruntled employees’ – political outsiders with low salaries – who, unlikely to benefit from oil revenue, become disaffected from citizen service. The results shed new light on processes through which resource extraction changes state institutions.*

KEYWORDS: Resource curse; Africa; bureaucrats; accountability

1. Introduction

In her pioneering research on oil-producing states, Terry Karl observed that ‘oil wealth molds institutions more dramatically than development specialists ever imagined’ (Karl, 1999, p. 34). Since then, a large body of scholarship on the politics of the resource curse has shown that natural resource revenues undermine the fiscal contract between state and society: the ruling elite become less responsive to taxpayers and more responsive to foreign actors in the natural resource sector. Exactly how these changes take hold – and which actors contribute to them – however, remains under-theorised. Although much of the literature focuses on rent-seizing politicians, rulers often depend on agents, such as political allies, military personnel, or bureaucrats, to aid them in the construction of rentier states.

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Building on recent advances in micro-level studies of the resource curse (Cappelen, Fjeldstad, Mmari, Sjørusen, & Tungodden, 2018; de La Cuesta, Milner, Nielson, & Knack, 2019; Harris et al 2020; Paler, 2013; Springman, Grossman, & Pierskalla, 2020; Sandefur, Birdsall, Fishkin, & Moyo, 2020), this study examines whether and how bureaucratic officials – those responsible for the day-to-day business of the state – contribute to resource-induced changes in the fiscal contract. We investigate bureaucrats’ responses to new or expanding resource revenues in a pre-registered survey experiment conducted with over 3,000 central government employees in Ghana and Uganda – two countries with relatively recent oil discoveries.¹ The experiment randomly assigns bureaucrats to receive information about an increase in government oil revenue, then follows with questions that ask respondents to rate their level of agreement with statements relating to 1) the importance of responding to taxpayers, 2) the political use of government revenue, and 3) the acceptability of using state resources for personal benefit. Although the experiment probes attitudes and not actual behaviour, we provide suggestive evidence that survey participants’ attitudes are correlated with relevant behaviour and that bureaucrats in these contexts have the power to impact broader actions of the ruling elite.

Overall, the findings suggest that bureaucrats in these contexts are not particularly likely to express attitudes indicating that they contribute to the resource curse. In Uganda, we find no evidence that learning of new oil revenue induces bureaucrats to express preferences that would undermine the state-taxpayer fiscal contract. In Ghana, we find that in only one of the three attitudinal questions – the importance of responding to taxpayers – do bureaucrats respond to the oil prime in ways reflective of the resource curse. This finding, however, does not operate through those partial to the incumbent political leadership, as we had expected: among the Ghanaian bureaucrats surveyed, we find clear evidence that those who have lower salaries and lack political connections are more sensitive to the oil revenue treatment. We interpret this finding as evidence that changes in government responsiveness to taxpayers is driven in part by ‘disgruntled’ state employees who, unlikely to benefit from revenue windfalls, become disaffected from public and taxpayer service. This result suggests that the literature’s conventional focus on rent-seizing rulers and severed tax linkages may be misguided, emphasising instead the roles of political outsiders and distributional concerns in undermining the fiscal contract in oil-producing states.

The paper sheds new light on the processes underlying the resource curse in contexts of new or expanding resource revenues and points to fruitful areas for future research. Specifically, the findings suggest that bureaucrats would not easily or willingly engage in the political spending and corrupt activities commonly associated with the resource curse. Such knowledge helps both academics and practitioners to better understand which types of actors are more or less likely to advance – or resist – changes to the fiscal contract that frequently co-occur with resource extraction.

We begin with a theoretical discussion about the potential roles of bureaucrats in facilitating the resource curse. We then provide a brief overview of oil management in Ghana and Uganda, followed by a description of the survey experiment design and the analysis. In [Section 5](#), we present the overall findings for each of the three hypotheses and, in [Section 6](#), we test for differences in treatment effects across subgroups of bureaucrats. We conclude with a discussion of the results as well as a call for more investigation of the processes through which the introduction of oil revenue brings about institutional change.

2. Resource revenue, bureaucrats, and the fiscal contract

As resource-exporting states receive larger and larger proportions of their revenue from external rents, they become less reliant on – and less accountable to – the taxpaying population. Heightened reliance on resource revenue undermines the implicit ‘fiscal contract’ involved in taxation, whereby the ruling elite respond to taxpayer demands in order to maintain power and secure future revenues (Bates and Lien 1985, e.g.). Rulers in the resulting ‘rentier’ states spend state revenue in ways that privilege their political or personal interests over those of the public.² They become reluctant to ‘use scarce administrative resources to promote broad economic development’ (Moore, 2004, p. 306) and

favour a range of policies based on short-term consumption and patronage over longer-term public investments (Anderson, 1987; Mahdavy, 1970; Ross, 2001a, 2012; Sachs & Warner, 2001). These spending practices help leaders to entrench their power by buying off political opponents and/or building the coercive force necessary to repress political rivals (Ross, 2001a; Wantchekon, 2002; Wright, Frantz, & Geddes, 2015). Both large-N cross-national studies (e.g. Andersen, Johannesen, Dreyer Lassen, & Paltseva, 2013; Jensen & Wantchekon, 2004; Morrison, 2009; Ramsay, 2011) and case studies (e.g. Chaudhry, 1997; Karl, 1997; Lewis, 2009; Saylor, 2014; Yates, 1996) have extensively documented these resource-induced changes in relationships between the ruling elite and taxpayers.

There is considerably less knowledge, however, about when and how the fiscal contract is weakened and which types of actors, beyond the political elite, help to drive these processes forward. In Angola, for example, leaders rely on parallel state structures, closely tied to the ruling party, that simultaneously administer oil production, manage revenues, and serve political interests (Croese, 2017; De Oliveira, 2015). In other cases, the military has gained prominence as a key ruling agent in petro-states, such as in Venezuela and in Nigeria in the 1960s and 1970s (Panter-Brick, 1978). In still other cases, bureaucrats are likely to occupy central roles in processes of rentierization because they manage the distribution of mining permits, resource rents, or both (Ross, 2001b).

We focus in particular on the roles of bureaucrats in shaping or re-shaping the fiscal contract in new oil-producing states. Bureaucrats are potentially important arbiters of the resource curse because they often have significant discretion to directly impact the day-to-day implementation of government programmes (Lipsky, 1980; Pressman & Wildavsky, 1984). If, like politicians, revenue windfalls induce bureaucrats to adopt attitudes and behaviours that privilege their own interests over those of the public, they may serve as autonomous actors undermining the state-taxpayer fiscal contract. Like politicians, bureaucratic officials may become less interested in serving taxpayers and more interested in engaging in activities to capture resource rents to advance their own personal, political, or career interests. As Mahdavy warned, ‘the temptations for a government bureaucracy to turn into a rentier class with its own independent source of income are considerable’ (Mahdavy, 1970, p. 467).

Bureaucrats may also contribute to the resource curse by serving as willing agents of political principals seeking to construct rentier states. In the midst of oil booms in Venezuela, for example, President Carlos Andrés Pérez sought to centralise and consolidate control over the bureaucracy, thus incentivising bureaucrats to comply with presidential spending directives (Karl, 1997, p. 90). In the Philippines, Ferdinand Marcos seized control of the agency responsible for timber licences, entrusting only his hand-picked associate to grant licences (Ross, 2001b, p. 76). Whether bureaucrats respond to these political changes by serving as willing agents of the ruling elite or resisting rulers’ political agendas holds important implications for the broader development of the resource curse.³

2.1. Bureaucratic responses to resource revenue

Drawing on the extant literature, we hypothesise three ways in which bureaucrats’ preferences may change in response to new or expanded resource revenue. First, if bureaucrats observe that resource revenue displaces tax as a key source of government revenue, and the operations of government are less reliant on taxpayers; bureaucrats’ incentives to respond to taxpayer demands will decrease. Bureaucrats will come to feel that taxpayer response is less important than servicing foreign buyers or political superiors who seize control of rents. Likewise, political superiors may lessen the extent to which they monitor and sanction bureaucrats who are not providing adequate services to citizens. Additionally, to the extent that oil is associated with lower levels of bureaucratic resources to collect taxes or serve the public (Chaudhry, 1997), it can undermine bureaucrats’ motivations and abilities to serve citizens (Bakker, 2015; Dasgupta & Kapur, 2020). This leads us to our first hypothesis regarding bureaucrats attitudes towards *responding to taxpayers*:

Hypothesis 1. *When civil servants learn of increased revenue from oil, they become less willing to respond to taxpayer demands for services.*

Second, bureaucratic officials could contribute to the politicisation of the state apparatus. As the aforementioned examples from Venezuela and Indonesia suggest, politicians in rentier states are likely to use the bureaucracy – particularly those agencies that administer resource extraction and execute spending – to seize control of resource rents and use them for political advantage. Bureaucrats may respond to these pressures by themselves becoming more willing to serve and support the ruling elite in order to advance in their careers or to gain access to the expanding reservoir of rents. This leads us to a second hypothesis about bureaucratic support for political spending:

Hypothesis 2. *When civil servants learn of increased revenue from oil, they will demonstrate greater levels of acceptance for spending in politically-supportive districts.*

Third, resource extraction could make bureaucrats more willing to use of public resources for their own private benefit. A number of studies link resource extraction and monetary surpluses to higher levels of government corruption (e.g. Knutsen, Kotsadam, Olsen, & Wig, 2017; Leite & Weidmann, 1999; Robinson, Torvik, & Verdier, 2006; Ross, 2015; Sala-i Martin & Subramanian, 2013). In Saudi Arabia, for example, oil revenue drove fragmentation of the bureaucracy in ways that loosened constraints on bureaucrats' use of their positions for personal benefit (Hertog, 2010; Mishra, 2006).⁴ Additionally, corruption itself may serve as a self-fulfilling prophecy (Corbacho, Gingerich, Oliveros, & Ruiz-Vega, 2016). Just as citizens are likely to see resource extraction leading to more corruption (Cappelen et al., 2018; Vicente, 2010), bureaucrats could also become more willing to either overlook corrupt behaviour or engage in it themselves because of the increased scale on which they expect it to occur. Since oil, in particular, comes with the expectation among state officials that future revenues will grow in perpetuity (Mahdavy, 1970), bureaucrats would come to feel that small diversions of resources for personal use would not seriously harm the public. We therefore propose a third hypothesis about private benefit:

Hypothesis 3. *When civil servants learn of increased revenue from oil, they become more permissive of private benefits from state finances.*

2.2. Who is susceptible to the resource curse?

Beyond these general expectations, we also hypothesise that some types of bureaucrats are more likely to adopt attitudes that contribute to the resource curse. First, we expect that those who are better educated and have a longer history of public service should be *less* impacted by an increase in oil revenue. The logic here is that individuals with such characteristics are more likely to act autonomously from changes in the political, social, or economic environment (Carboni, 2010) and in line with ethical standards and public service values (Perry & Hondeghem, 2008).

Although longer tenures of service would make bureaucrats less susceptible to the impacts of oil revenue, we hypothesise that those occupying higher-level positions are *more* likely to be affected because they are more involved in budgets and spending decisions. Higher-level employees are also subject to more direct pressures from the ruling elite, serving as another channel through which they could be impacted by oil revenue.

Partisanship may also play a key role. We expect that bureaucrats aligned with the ruling party will be more likely to adopt attitudes that undermine the fiscal contract because they will have greater access to rents and stronger expectations of personal gains that flow from their connections to the party.

Finally, we hypothesise that bureaucrats in organisations that manage oil revenue are also more likely to adopt attitudes consistent with the resource curse expectations. Although, theoretically, oil

Table 1. Subgroup hypotheses

Subgroup	Hypothesised Effect
Years in Service	Those with longer tenure should be <i>less</i> sensitive to new oil revenue
Education level	Employees with higher education levels should be <i>less</i> sensitive to new revenue
Position/Grade	Higher-level employees should be <i>more</i> sensitive to new oil revenue
Political Affiliation	Ruling party supporters should be <i>more</i> sensitive to new oil revenue
Organization Revenue	Employees in organisations that plausibly receive oil revenue should be <i>more</i> sensitive to new oil revenue

revenue could have impacts throughout the entire bureaucracy, we expect those working in oil-related sectors to be more strongly impacted by potential increases in oil revenue. All subgroup hypotheses are summarised in [Table 1](#).⁵

3. Oil and the bureaucracy in Ghana and Uganda

The context for our study is Ghana and Uganda – two countries with relatively recent oil discoveries. Ghana began producing and exporting oil from its offshore deposits in 2010. In the three years prior to the study, petroleum receipts constituted an average of 7 per cent of Ghana’s domestic revenue (Government of Ghana 2016). In Uganda, oil was discovered onshore in 2006, but production has not yet begun. Once operational, Uganda’s oil production is expected to yield amounts that would constitute upwards of 30 per cent of government revenue (additional revenue statistics are provided in [Section 4.2](#) below). Despite these differences in the types of deposits and timing of oil production, the two countries are, together, largely representative of African countries with new oil and gas discoveries in terms of their political institutions, economic wealth, and demographics. They have been studied jointly in a number of recent projects examining natural resource management and its impacts in new oil states (de La Cuesta et al., 2019; Hickey, Abdulai, Izama, & Mohan, 2015).

Importantly, both governments primarily manage oil through the existing bureaucracy: bureaucrats are involved in the management of oil revenue (Ghana) and pre-oil production decision-making (Uganda). In Ghana, the Petroleum Management and Revenue Act (2011, updated in 2015), calls for an Annual Budget Funding Amount (ABFA) that is allocated to the government budget with Parliamentary approval. Up to this point, the ABFA has funded road, education, health, agriculture and communications projects, which suggests that a broad set of bureaucrats/ministries have engaged with oil revenue via these projects.⁶ These spending priorities are included in agency budgets published as part of the Ministry of Finance’s annual budget statements.

In Uganda, the Oil and Gas Revenue Management Policy of 2012 outlines a similar system. The Ugandan Revenue Authority, in collaboration with ‘other relevant technical departments under the Ministry responsible for Energy’ will administer the collection and administration of government revenues from oil and gas activities. Like in Ghana, an ‘Annual Budget Funding Amount’ will be transferred to the consolidated fund in the government budget and later allocated to ministries, departments, and agencies (Government of Uganda, 2012, pp. 30–31).

In both countries, the developing oil sectors have generated significant attention in the media and throughout government. In Ghana the terms of the government’s contract with Kosmos Energy, the U.S.-based company that discovered Ghana’s offshore deposits, became a major campaign issue in the 2012 election. Both the Ghanaian government and major donors like the World Bank have convened numerous conferences and workshops about oil revenue management, and there has been significant consultation with civil society groups on such issues. In Uganda, the sheer size of discoveries have generated significant attention from the media, civil society, and, in some cases, members of parliament (Paler et al., 2020). Oil in Uganda has also come with significant investments in related infrastructure, such as

railways and pipelines connecting Uganda's oil regions to coastal ports. Not only have these projects sustained media coverage of Uganda's nascent oil industry, but they also suggest that bureaucrats across different government sectors are likely to be involved in oil-related projects. In short, regardless of whether or not bureaucrats have direct experience with the oil sector or its profits, they are, in both countries, likely to have formed expectations regarding the potential uses and impacts of oil revenue.⁷

4. Research design

The study involves a survey experiment conducted with employees of central government agencies in Accra and Kampala, the capital cities of Ghana and Uganda respectively. The survey experiment primes bureaucrats to think about oil revenue then assesses their attitudes towards the three underlying elements of the fiscal contract. Following standard survey experiment design, the attitudinal questions are asked directly following the oil revenue prime, which helps to ensure that other survey content is not driving the results. This method facilitates a potential causal interpretation of the results with regards to the salience of oil revenue in bureaucrats' preferences towards taxpayer response, ruling party spending strategies, and private use of state resources. Second, the method provides a means to establish the exogeneity of oil revenue at the individual level. Additionally, the survey allows us to gather key data for bureaucrats in Africa, a population for which studies have so far provided limited systematic data, and provide a starting point for future studies interested in studying the institutional progression of the resource curse.

Of course, the experimental design captures only attitudes, not actual behaviour. Studying the attitudes of bureaucrats is, however, important in its own right. There is abundant evidence that public servants who are principally motivated by personal or political gain, or do not embrace impartiality towards political or social groups, are more likely to engage in unethical behaviour and are less likely to perform well in their jobs (Bellé, 2013; Pinder, 2014; Rothstein & Teorell, 2008). Higher levels of motivation to perform service to the public, moreover, are associated employees' job satisfaction and work effort (Lyons, Duxbury, & Higgins, 2006; Mostafa, Gould-Williams, & Bottomley, 2015). Thus, if oil revenue causes bureaucrats to become less eager to serve taxpayers, more subservient to politicians, or more interested in serving their private interests, their performance of government agencies is likely to suffer. Moreover, the attitudinal outcomes may suggest, but do not necessarily imply, that an individual would act in accordance with their stated opinion. In behavioural experiments we conducted as part of the broader survey project (not related specifically to the oil experiment), we find a strong correlation between responses to direct survey questions and behavioural outcomes (see Section I in the supplementary material for this analysis). Additionally, recent studies from African contexts, including Ghana, suggest that at least some bureaucrats have considerable discretion in their ability to shape political and policy outcomes (e.g. Brass, Schon, Baldwin, & MacLean, 2020; Rasul et al., 2021).⁸ In the resources sector, in particular, it is not only elites who shape political and economic outcomes associated with natural resource extraction (Steinberg, 2019). In short, there are good reasons to believe that the attitudes of bureaucrats studied in this paper would, at times, translate into meaningful action that is independent of ruling party pressure and that these actions would have implications for the broader development of the resource curse.

4.1. Survey sample and demographics

The survey was conducted in the two countries in 2017 with central government employees whose primary work location is in the capital city of each country. The sample excluded both local government employees and 'street-level' bureaucrats such as teachers, nurses, doctors, bus drivers, and police. To ensure a diverse sample, we recruited employees from multiple entry points across a range of organisations, functions, levels of employment, and, where relevant, contract-types. The sample is based primarily on access and convenience.⁹ We reached 1,641 bureaucrats from a total of

Table 2. Survey sample demographics

	Ghana	Uganda
Number of Respondents	1641	1537
% Female	46.9%	45.0%
% with Bachelors degree or higher	80.1%	85.2%
Average Years of Service	10.9	10.9
Average Age	38.1	37.4
% Largest Ethnic Group (Ashante/Baganda)	17.4%	29.8%
Type of Position		
% Manager	11.7%	13.5%
% Technical/Professional	39.9%	39.2%
% Administrative	47.5%	39.3%
Partisanship		
Support/Member of Party	25.4%	30.7%
Non-Partisan	56.4%	53.4%
Prefer Not to Respond	18.2%	15.9%
Ruling Party Supporter	18.9%	23.07%
Opposition Party Supporter	7.6%	13.39%

49 different institutions in Ghana and 1,537 bureaucrats from 31 different institutions in Uganda, listed in the supplementary material (Section C). Using methods described in Section D of the supplementary material, we estimate that our samples contain 1.7 per cent of the relevant population of ministry, department, and agency employees in Ghana, and 3.3 per cent of the relevant population in Uganda.

The resulting samples are similar in a number of key areas that make comparisons across the two countries reasonable (See Table 2). Both samples have at least 80 per cent with bachelors degrees, equal average years in the service, and nearly identical average ages. We also see roughly the same breakdown of managers, technical/professional staff, and administrators, which suggests that differences across the samples in terms of outcomes are not likely driven by different types of bureaucrats in each sample.¹⁰

4.2. The priming experiment

The survey experiment randomly assigns survey participants to one of three groups: treatment, placebo, and control. Those assigned to the treatment group received a message describing a projected increase in oil revenue flowing to the government budget. The use of a projection of

Ghana Treatment: Did you know that over the next few years, government ministries, departments and agencies will receive at least \$500 million in additional revenue from oil production compared to the last few years? However the amount of revenue collected through taxes from citizens is unlikely to change.

Uganda Treatment: Did you know that over the next few years, government ministries, departments and agencies will receive at least \$500 million in additional revenue from oil once production begins? However, the amount of revenue collected through taxes from citizens is unlikely to change.

Placebo (both countries): Did you know that over the next few years the revenue of government ministries, departments and agencies will increase by at least an additional \$500 million?

Figure 1. Treatment conditions.

future revenues in the prime enables us to use similar messages in Ghana and Uganda despite their different stages of oil production. The message delivered to the placebo group contains information about projected increases in government revenue, but does not mention oil specifically. The control group does not receive any message. The treatment and placebo messages are presented in [Figure 1](#). The only difference in messaging between the two countries is that the treatment message received by Ugandans includes the phrase ‘once production begins’. Whereas a more optimal behavioural design would be to randomly assign oil revenue to different organisations or individuals, this was not feasible in the context of our study.

The logic of the placebo is that any observed effects from the treatment could be due to generic increases in government revenue, rather than revenue increases that are specifically related to oil. The inclusion of the placebo message therefore allows us to distinguish effects of oil revenue from other possible sources of government revenue such as taxes or foreign aid. The control group, which receives no prime at all, is designed to provide a baseline against which those receiving the treatment are compared.¹¹

We chose the \$500 million amount because it was high enough to be realistic in Uganda and low enough to be realistic in Ghana. At the time we were conducting the experiment (2017), the Ugandan government was expecting to earn \$3.6 billion dollars in revenue per year upon the start of oil production (Oketch, 2014).¹² In Ghana, the government had, in its 2016 budget, estimated that revenue would range from \$252 to \$787 Million per year over the next several years (Government of Ghana 2016). The \$500 million figure therefore permitted us to avoid the use of deception in the experiment while also making the treatments comparable across contexts.

4.3. Post-treatment attitudinal questions and analysis

After the prime, all survey participants were asked a series of questions designed to assess their attitudes towards the three dimensions of severed fiscal contracts described in [Section 2](#). Each of the questions asked bureaucrats to indicate their level of agreement with the following statements. Agreement was assessed on a 5-point scale ranging from strongly disagree (1) to strongly agree (5):

- (1) ‘Public servants should have the right to delay responding to taxpayer demands for services if they are overburdened with work.’
- (2) ‘Governments should have the right to increase public spending for districts that help them get elected.’
- (3) ‘It is acceptable for a public servant to divert government revenue to cover the costs of medical care for a critically-ill family member.’

In devising the post-treatment questions, we sought language that would minimise social desirability bias with the phrases ‘if they are overburdened by work’ and ‘to cover cost of medical care’. We also took measures, such as handing the tablet to the respondent to view the prime and respond to the questions, to further promote honest responses. Although we cannot be certain that participants felt comfortable answering honestly, we do find that social desirability bias does not appear to be a significant issue when using list experiments on other sensitive topics included in the survey (see supplementary material Section H).

We analyse the effects of the oil prime on responses to these questions by comparing average rates of agreement across the treatment and control groups. We consider higher levels of agreement with the outcome question as a positive response under treatment, indicating an individual’s acceptance of, or less resistance to, the resource curse mechanism of interest. In other words, if those in the treatment group have significantly higher levels of agreement with a statement than those in the control group, we interpret this result as evidence that bureaucrats adopt attitudes that would contribute to the resource curse. By contrast, negative (lower levels of agreement) or statistically indistinguishable responses indicate that bureaucrats’ are not affected by oil revenue in ways that would contribute to the resource curse. We also conduct tests comparing average responses across

treatment and placebo groups, allowing us to better understand the extent to which any observed treatment effects are (or are not) driven by increases in oil revenue specifically.

To analyse the hypothesised differences in treatment effects between subgroups, we split respondents into ‘high’ and ‘low’ groups for each of the categories listed in Table 1. The operationalisation of subgroups is described in detail in the supplementary material, Section B.

5. Full sample results

We first present results from difference-of-means tests analysing the pooled sample of bureaucrats from both countries. We then present the same sets of tests broken down for each country. Figure 2 plots results for the pooled sample. Positive differences indicate that those in the treatment group had *higher* levels of agreement with each statement, signifying attitudes consistent with the hypothesised resource curse expectations. Negative differences indicate that those in the treatment group had *lower* levels of agreement (or higher levels of disagreement) with each statement.

As is evident from Figure 2, the effects of the oil revenue prime on bureaucrats’ attitudes towards taxpayers, political spending, and private use of resources are, at best, inconsistent. For the taxpayer responsiveness hypothesis (Hypothesis 1), the difference between treatment and control groups is in the expected direction but does not achieve conventional levels of statistical significance. In the case of political spending (Hypothesis 2), the results are inconsistent with our predictions: bureaucrats in the treatment group have somewhat lower (though not statistically significant) levels of agreement with the statement about the acceptability of political spending than those either the control or placebo groups. Likewise, the results for Hypothesis 3 show that bureaucrats receiving the oil treatment are no more likely to tolerate corrupt behaviour than those in the control or placebo groups.

We further explore these results by breaking them down for each country, presented in Figure 3. We find that, in all but one test, the results, again, either do not conform with the directionality of our expectations or they do not meet the 95 per cent confidence threshold (or both).¹³ Overall, we find

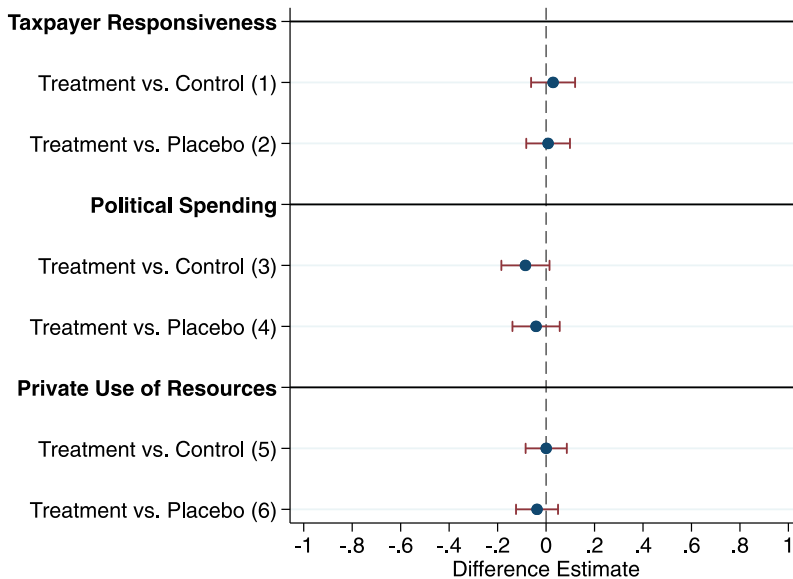


Figure 2. Full sample pooled results.

Note: Difference-of-means estimates with 95 per cent confidence intervals. A positive difference indicates that the treatment group has higher average levels of agreement with each statement. The number of observations are as follows (1) 2,072; (2) 2,103; (3) 2,070; (4) 2,097; (5) 2,077; (6) 2,107.

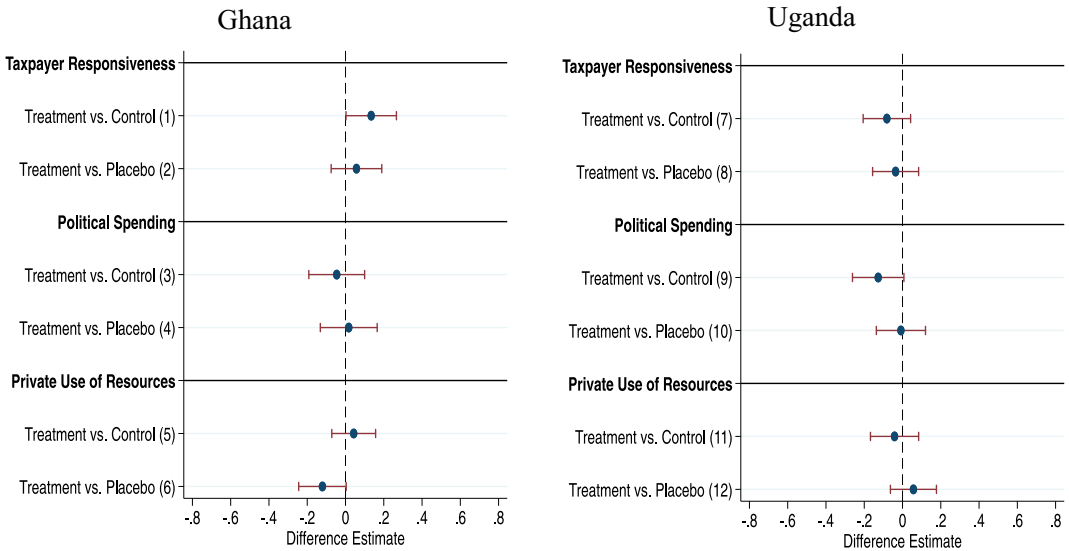


Figure 3. Full sample results by country.

Note: Difference-of-means estimates with 95 per cent confidence intervals. A positive difference indicates that the treatment group has higher average levels of agreement with each statement. The number of observations are as follows (1) 1,049; (2) 1,098; (3) 1,051; (4) 1,096; (5) 1,055; (6) 1,102 (7) 1,023 (8) 1,005 (9) 1,019 (10) 1,001 (11) 1,022 (12) 1,005.

only limited evidence that bureaucrats in these two countries are likely to adopt attitudes that contribute to the resource curse. Only in one of the tests in one of the countries do we detect response patterns consistent with the hypotheses. Specifically, bureaucrats in Ghana respond to the oil revenue prime in ways that indicate lowered levels of interest in serving taxpayers. We further explore this finding in [Section 6](#).

The analyses therefore point to results that are largely null. We perform two further tests, both of which confirm these null results. First, we perform a set of equivalency tests, which allow us to explicitly consider substantive effect sizes. We follow past research (Dynes & Holbein, 2020; Hartman & Hidalgo, 2018) and adopt plus or minus 36 per cent of a standard deviation as our equivalence range, which is the range within which the substantive difference between the treatment and control (or placebo) is substantively inconsequential. In all cases our estimates fall within the equivalence range. These results are shown in the supplementary material (Figure S4 in Section F).

Second, we replicate the tests comparing treatment and placebo groups, but we restrict the placebo sample only to those who did *not* associate the placebo message with oil. Since 41 per cent of respondents in the placebo group associated the priming message with oil, removing these individuals should make it easier to find meaningful differences between treatment and placebo groups. Yet, when we remove these individuals from the sample, we still do not find any support for our hypotheses (See Table 10 in Section F in the supplementary material). This analysis also provides confidence that those in the treatment group were in fact treated, since a sizeable portion (41%) of placebo respondents – who received no signal to think about oil – indicated that oil was a source of the increase in revenue.

To summarise, both the pooled and country-specific results largely indicate that bureaucrats are unlikely to adopt attitudes that contribute to the severing of the fiscal contract between the state and taxpayers. Together, the mixed directionality of the main results, the presence of one statistically significant effect, the equivalence tests, and the analysis of the restricted placebo group all suggest that larger sample sizes or ‘stronger’ treatments would not necessarily produce clear or consistent support for our hypotheses.

6. Subgroup results

We now turn to the analysis of subgroups presented in [Section 2.2](#). These tests could serve as further confirmation of the null results obtained thus far. If we continue to find null results across different subgroups, we can be more confident that our findings are in fact null. If we do find effects for specific subgroups, however, the null findings in [Figures 2 and 3](#) could signify heterogeneity in treatment effects.

6.1. Pre-specified subgroup responses

[Table 3](#) displays the differences in mean responses along with standard errors, t-statistics, and total number of respondents for each pre-specified subgroup, details of which are provided in the supplementary material, Section B. The results are broken down by country for each of the three hypotheses. Overall, the results reinforce the findings from the previous section. The vast majority of test results across subgroups are null.

Once again, the only observed treatment effects are for the taxpayer responsiveness hypothesis in Ghana. Among respondents whose jobs involve primarily technical or managerial work, those who receive information about oil revenue have an average level of agreement with the statement about delaying responses to taxpayers that is 0.24 points higher (on a scale of 1 to 5) than those who do not receive the information. By contrast, for those whose jobs involve primarily administrative work, treated respondents have only a 0.04 higher level of agreement with the taxpayer response statement, a difference that does not achieve conventional levels of statistical significance. This finding is consistent with our expectations that those in higher level positions (i.e. technical and managerial roles) are more likely to respond to treatment in ways that reflect the resource curse. However, when we assess grade of employment based on salary, we find, among those with higher salaries, that there is *no difference* in responses between treatment and control groups. By contrast, among *lower salaried* employees, those receiving information about oil revenue have a level of agreement with the statement about delaying taxpayer response that is 0.23 points higher than those in the control group. This result is *not consistent* with our hypothesis that higher-level employees should be more susceptible to the resource curse.¹⁴

These results suggest some differentiation between salary levels and position type. Indeed, there is only a weak correlation ($r = 0.16$) between the two variables in Ghana, indicating that we are capturing two different groups of bureaucrats. Whereas those who perform primarily technical and managerial tasks have a wide range of salaries, those in administrative positions are more concentrated towards the lower end of the salary scale. As such, given that entry-level technical personnel might not have a high grade of employment, we believe that the salary level variable serves a better overall proxy for one's grade of employment than the position-type variable.

6.2. Disgruntled Bureaucrats and Taxpayer Responsiveness in Ghana

This section moves beyond our pre-specified hypotheses to probe more deeply into the effects of oil revenue on taxpayer responsiveness in Ghana in hopes of better understanding the dynamics driving the results reported in [Table 3](#). We begin by investigating differences in reactions to the taxpayer responsiveness question across control and treatment groups in Ghana, followed by a deeper analysis of heterogeneity in treatment effects among different subgroups.

Recalling that the post-treatment question is assessed on a likert scale measuring levels of agreement or disagreement with the statement about the acceptability of delaying responses to taxpayer requests, it is helpful to understand how responses differ based on treatment condition. [Table 4](#) shows differences between the control and treatment groups across the five response categories. The largest difference is seen in the 'strongly disagree' category, where the treatment group had 4.29 per cent fewer respondents, indicating that they were less likely to strongly disagree with the statement. For the 'somewhat agree' category, the percentage of responses among treated

Table 3. Subgroup results

	Taxpayer Responsiveness (H1)				Political Spending (H2)				Private Use of Resources (H3)			
	diff	se	t	obs	diff	SE	t	obs	diff	SE	t	obs
Ghana												
Years in Service ≤ 8	0.114	0.102	1.10	515	0.011	0.114	0.10	517	0.077	0.092	0.85	517
Years in Service > 8	0.127	0.089	1.45	522	-0.101	0.097	-1.05	522	-0.003	0.073	-0.05	526
Education: No Bachelors	0.072	0.155	0.45	199	-0.243	0.188	-1.30	199	-0.017	0.147	-0.10	200
Education: Bachelors	0.153	0.075	2.05	841	-0.011	0.081	-0.15	843	0.057	0.064	0.90	846
Grade/Position: Low Salary	0.229	0.092	2.50*	627	-0.025	0.101	-0.25	629	0.143	0.086	1.65	632
Grade/Position: High Salary	0.000	0.097	0.00	402	-0.068	0.109	-0.60	402	-0.071	0.070	-1.00	402
Position: Administrative	0.042	0.105	0.39	485	0.000	0.116	0.01	484	0.023	0.095	0.24	491
Position: Manager/ Technical	0.242	0.086	2.83**	553	-0.070	0.097	-0.73	555	0.065	0.072	0.91	554
Party: Not Ruling	0.216	0.081	2.65**	666	0.051	0.091	0.55	669	0.12	0.072	1.65	671
Party: Ruling NPP	-0.022	0.192	-0.10	138	-0.064	0.207	-0.30	136	0.109	0.173	0.65	137
Not Politically Connected	0.235	0.074	3.15***	760	-0.012	0.079	-0.15	761	0.091	0.056	1.65	764
Politically Connected	-0.096	0.144	-0.65	281	-0.104	0.169	-0.60	282	-0.102	0.147	-0.70	285
Oil Revenue: None	0.070	0.079	0.90	677	-0.03	0.09	-0.35	678	0.045	0.067	0.70	682
Oil Revenue: Plausibly received	0.236	0.138	1.70	311	-0.049	0.148	-0.35	312	0.040	0.121	0.35	313
Uganda												
Years in Service ≤ 8	-0.103	0.090	-1.15	496	-0.148	0.100	-1.50	496	-0.009	0.091	-0.10	497
Years in Service > 8	-0.050	0.088	-0.55	517	-0.114	0.093	-1.20	513	-0.085	0.09	-0.95	515
Education: No Bachelors	-0.241	0.181	-1.35	150	-0.066	0.190	-0.35	149	-0.079	0.197	-0.40	149
Education: Bachelors	-0.053	0.068	-0.80	869	-0.137	0.074	-1.85	866	-0.035	0.068	-0.50	869
Salary: Low	-0.139	0.085	-1.65	582	-0.132	0.092	-1.40	580	-0.081	0.088	-0.90	582
Salary: High	-0.035	0.096	-0.35	427	-0.116	0.104	-1.10	425	0.005	0.096	0.05	426
Position: Administrative	-0.060	0.104	-0.57	398	0.090	0.119	-0.76	394	-0.112	0.108	-1.04	395
Position: Manager/ Technical	-0.083	0.081	-1.02	609	-0.133	0.084	-1.57	609	0.088	0.081	0.11	609
Party: Not Ruling	-0.122	0.082	-1.50	627	-0.185	0.088	-2.10*	624	-0.054	0.085	-0.65	626
Party: Ruling NRM	-0.054	0.141	-0.40	208	-0.059	0.151	-0.40	208	-0.015	0.137	-0.10	208
Not Politically Connected	-0.083	0.066	-1.25	882	-0.107	0.071	-1.50	879	-0.007	0.068	-0.10	881
Politically Connected	-0.052	0.205	-0.25	138	-0.226	0.222	-1.00	137	-0.242	0.189	-1.30	138

T-test results comparing treatment and control groups across subgroup.

* p < .05 **p < .01 ***p < .004 (Bonferroni correction)

respondents was 3.27 per cent higher than those of the control group. These comparisons suggest that the treatment is ‘moving’ respondents away from high levels of disagreement with the statement about delaying responses to taxpayers towards more moderate levels of agreement.

In Table 3 above, we found almost no support for our expectations about which types of government employees are most susceptible to the resource curse. Lacking a pre-specified explanation for why those with lower salaries and those without political connections would respond to the oil revenue treatment by expressing greater acceptance of delayed responses to taxpayers, we propose a ‘disgruntled employee’ hypothesis: those who perceive themselves as not benefiting from oil revenue become disaffected from public and taxpayer service. This hypothesis draws on research suggesting that public service employees in lower-level positions, and on lower ends of the salary

Table 4. Differences by response category: taxpayer responsiveness in Ghana

Response	Control	Treatment	Difference
Strongly Disagree	73.72%	69.43%	-4.29
Somewhat Disagree	12.65%	11.79%	-0.86%
Neither Agree nor Disagree	5.14%	6.81%	+1.67%
Somewhat Agree	5.34%	8.29%	+3.27%
Strongly Agree	3.16%	3.68%	-0.52%

Table 5. ‘Disgruntled’ employees and taxpayer responsiveness (Ghana only)

Bureaucrat Type	Diff	SE	t	N (tr)	N (c)
(1) Low Salary, Not Connected	.336	.105	3.495***	211	209
(2) Low Salary, Connected	.001	.175	.008	105	98
(3) High Salary, Not Connected	.079	.102	.775	172	152
(4) High Salary, Connected	-.34	.258	-1.331	43	33

*** $p < .001$

scale in particular, are less likely to demonstrate high levels of work commitment and public service motivation (e.g. Crewson, 1997). This hypothesis also draws on the theory, discussed in Section 2, that resource revenue generates expectations that others will profit personally from this revenue. Seeing themselves as especially unlikely to benefit from revenue windfalls, these bureaucrats become less motivated to perform their public service jobs.

We examine this hypothesis directly by comparing treatment effects among those in the ‘disgruntled group’ (low salary and not politically connected) to those who are not in that group. Indeed, as seen in Table 5, the difference between treatment and control groups is .336 for low-salary, not connected individuals ($n = 420$), which is significantly higher than the full-sample difference of .134 ($n = 1,049$) in Ghana (Figure 3, Model 1). The treatment effect within the disgruntled group has a high level of confidence ($t = 3.495$, $p < .001$). Importantly, these disgruntled bureaucrats are the only group for whom the treatment effect remains: those who are only partially (groups 2 and 3 in Table 5) or not at all (group 4) disgruntled, are not significantly impacted by the oil revenue prime.¹⁵

7. Discussion

We extract two main takeaways from the experiment’s findings. First, in general, the results do not support the broad notion that bureaucrats contribute to the severing of the fiscal contract that is commonly associated with the resource curse. We find no support for the idea that oil would induce bureaucrats to embrace practices of politically-directed spending or the private use of public resources. The mixed directions of these results along with supplementary tests suggest rather clearly a lack of support for these hypotheses rather than weak treatment or flawed experimental design. Further, power analysis indicates that our realised sample sizes – approximately 1000 per country and 2000 pooled – are sufficient to detect effect sizes of .125 and .177, respectively. 44 per cent of our main effects are at least these sizes while the remaining estimates are extremely close to zero and precisely estimated (see Figures 2 and 3). One possible interpretation of the null results is that when oil induces changes in bureaucratic institutions, these changes are likely driven by political actors rather than bureaucrats. To the extent bureaucrats do support politicians in their efforts to construct rentier states, they are likely to do so based on pressure or coercion rather than on any fundamental shift in their professional or ethical attitudes.

Second, we do find evidence that, in Ghana, where oil production had been active for some time, that the oil revenue prime did induce the bureaucrats surveyed to become less interested in

responding to taxpayers. However, we find that those most sensitive to the treatment are individuals who are likely to perceive little or no benefit from the expansions in rents and revenues. This finding points to the need for further attention to the roles of political outsiders, or others unlikely to benefit from oil revenue, in facilitating the resource curse.

8. Conclusion

The findings point to several important areas of future research that would enhance understanding of how the resource curse takes hold. First, longitudinal studies would better capture changes in bureaucratic attitudes and institutional structures. The present study could form a baseline for future work. Second, it would be useful to directly probe how bureaucrats perceive changes in political oversight of the bureaucracy following major oil shocks and whether their levels of discretion change after these events. It would also be useful to probe other types of actors who may serve as ruling party agents in the construction of rentier states, namely political party members or security sector personnel. Based on this study's findings, these groups may be more predisposed than bureaucrats to act as political agents in undermining the fiscal contract.

More broadly, the study speaks to the uneven development of the resource curse. Whereas increases in oil revenue may weaken bureaucrats' concerns about responding to taxpayers (at least in Ghana), there are no corresponding impacts on their attitudes towards either politically-directed spending or the use of public resources for personal needs. The results of this study point to potential sequences and unevenness in the onset of the resource curse. For scholars seeking to understand institutional and behavioural changes resulting from oil production, it is therefore critical to disaggregate the different dimensions of rentier states and study them separately.

Finally, the results raise a number of questions about potential heterogeneity in resource curse emergence across countries. Are the effects observed in Ghana likely to replicate in other new oil-rich countries? The results from Uganda – in which treated bureaucrats do not respond to the taxpayer responsiveness statement in expected ways – suggest heterogeneity across countries. Whereas Ghana and Uganda are both African countries that have recently discovered oil, they differ on several key variables – regime type, economic structure, and the stage of oil production – that could be driving these differences. Such differences provide a roadmap for future research regarding why the resource curse progresses more rapidly in some contexts than it does in others.

Overall, the results of this study have implications for efforts to mitigate changes in the fiscal contract associated with the resource curse. If most bureaucrats are unlikely to adopt attitudes that contribute to rentierization, they may represent potential partners in efforts to dampen the adverse impacts of oil on government accountability. Whereas most interventions tend to focus on the government's management of oil revenues, such as national trust funds and the enhancement of transparency, our research points to the need to address distributional concerns among key sets of actors. The allocation of resource revenue to bureaucrats' salaries, and especially to rank-and-file bureaucrats who are not particularly well-compensated or well-connected, could attenuate changes in the fiscal contract that often accompany the resource curse.

Notes

1. In Ghana, oil production began less than 10 years ago. In Uganda, oil was discovered in 2006 but is not yet in production.
2. The concept of the rentier state comes from Mahdavy (1970), who defines it as 'those countries that receive on a regular basis substantial amounts of external rents' (428).
3. Bureaucrats could also be coerced into supporting the political principal, an issue we bracket for now but return to in [Section 7](#).
4. Constraints are lessened because (1) bureaucrats are not held accountable because they have information about the wrongdoing of their superiors or (2) bureaucrats shift their beliefs about service when seeing leaders steal and abuse.
5. This table is copied, with some edits for clarity and data availability, from the pre-analysis plan.

6. Ghana's Public Interest and Accountability Committee tracks oil revenue spending. See <http://www.piacghana.org/portal/29/36/the-abfa>.
7. A growing body of research shows that resource endowments can generate expectations about future behaviour, such that resource discoveries can shape attitudes before production actually begins (Cappelen et al., 2018; Frynas, Wood, & Hinks, 2017).
8. In our survey only one-third of respondents, distributed evenly across both countries, said they were worried about being dismissed for political reasons and only 6 per cent of respondents, again evenly distributed across both countries, said that they regularly 'feel worried that someone from the ruling party will not approve of my work.'
9. Given the absence of accurate government employee registers, there are significant logistical challenges in obtaining a random sample of public officials in these countries.
10. Managers are classified as anyone who indicated in the survey that one of their job responsibilities is to supervise other public servants. Technical/professional staff are those that, as part of their jobs, provide technical or professional services such as programme design, planning, or budgeting. Administrative positions are those who provide administrative support for the day-to-day running of the various offices across the public service.
11. The number of respondents assigned to each group are as follows. Ghana: control = 512, treatment = 539, placebo = 557. Uganda: 503, 516, 485, respectively. In order to test if the random assignment to treatment is balanced on observables, we regress treatment status on a number of covariates. We find that treatment status is generally not predicted by respondents' membership in the groups described in Section 2.2, nor by gender (see Table S9 in Section E of the supplementary material). We can therefore be relatively confident that the treatment was in fact randomly assigned.
12. This is based on oil prices in 2013–2014, which have since declined, risen, and declined again.
13. In Figure 3, it is apparent that Ugandans are driving the negative result for Hypothesis 2 whereby treated respondents have unexpectedly *lower* levels of agreement with the statement about political spending than those in the control group. Because This result is in the opposite direction as our hypotheses, and therefore does not support the idea that bureaucrats contribute to the resource curse, we do not explore it further here. We do, however, examine this result in a separate paper. See [Harris et al 2020].
14. The technical/managerial control group and the low-salary control group have very similar baseline responses to the taxpayer responsiveness statement: 1.40 for the former and 1.54 for the latter.
15. If we interact connections with having a technical/managerial position, we find that there is a positive effect, but this is also the case with regards to interacting connections and administrative position.

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