Abstract

In this paper we examine the rentier thesis that a state’s control over oil resources should help it resist calls for democratization. During Algeria’s mass mobilization for regime change known as the Hirak in 2019, we implemented an interactive experimental treatment providing specific information about the Algerian government’s high subsidies of gasoline and low value-added taxes with regional comparisons. Based on a sample of 5,968 Algerians, we find that when Algerians learn about their country’s relatively high level of fuel subsidies and low level of taxes, their assessments of the government’s performance improves; however, we do not see similar patterns for respondents’ expressed intention to join the protests due to treatment heterogeneity defined by respondent wealth. Wealthier respondents report lower protest intentions upon learning about the scope of the rentier state, whereas poorer respondents report much higher protest intentions upon receiving the treatment. As a result, we find that the rentier state may be capable of improving perceptions of regime performance, yet still permit mass mobilization if there are class differences in the perceived benefits derived from redistribution.

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The rentier theory, one of the longest standing conjectures of the determinants of regime type in comparative political science, argues that a state’s control over natural resources is likely to promote a more authoritarian form of government (Ross 2001; Herb 2005; Beblawi and Luciani 1987). The theory, which originated in the analysis of oil-rich states in the Middle East (Crystal 1990; Beblawi and Luciani 1987; Ayubi 1995), has been shown to be a compelling factor in authoritarianism through a wealth of cross-national studies showing a robust association between the level of oil wealth and dictatorship, particularly since the 1970s (Ross 2015). However, there is still limited experimental evidence that tries to manipulate the theory’s core variables to see if citizens respond to the government’s control over oil resources by limiting their demands for representative government (Paler 2013; Cuesta et al. 2019).

In this paper we focus on a core aspect of the rentier theory: the taxation-representation trade-off (Levi 1989; Tilly 1992; Prichard 2015). A state’s control over oil resources provides it with a source of revenue which does not require regular tax collection or compliance, permitting the ruler more autonomy and fewer pressures to bargain with citizens over the use of these resources. Our intention is not to test whether oil rents and taxes are actually substitutes—we assume that they are for our purposes—but rather whether the alleged reduction in taxes empirically reduces demands for representative, and ultimately democratic, government.

Testing whether this trade-off between oil rents and democratic aspirations exists is difficult because episodes of regime change are necessarily rare. To provide useful data, we examined a recent wave of popular mobilization in Algeria during 2019 known as the Hirak. This national protest movement endured for months up until the outbreak of the COVID-19 pandemic in 2020, and successfully forced the long-standing president, Abdelaziz Bouteflika, out of office. We fielded an online survey for several months during the early period of the protest movement from April to July 2019, recruiting a diverse sample of 5,968 Algerians. In our survey we embedded an interactive experiment which asked respondents for the amount...
they had spent on fuel subsidies and on goods covered by the value-added tax (VAT). To provide a plausible counterfactual per the rentier theory of an oil-free Algeria, we then showed them the increased amount they would spend on these items if they lived in Tunisia, a neighboring country which recently transitioned to democracy and does not have extensive fuel resources. We supplemented these individualized treatments with a general informational message showing that the Algerian state’s reliance on oil revenues has increased in recent years.

Our results show that the treatments improved respondents’ perceptions of the government’s performance, measured as its ability to combat corruption, provide public goods, implement reforms and guard stability. However, we found that the treatments’ effect on political actions, in particular a respondent’s willingness to join the protest movement, are heavily conditioned by the respondent’s wealth. Wealthier respondents were much less likely to report a desire to join the protest movement upon receiving the treatment, while the opposite held for poorer respondents. Furthermore, the overall positive effects of the treatment on attitudes toward government performance are likewise concentrated among wealthier respondents. As such while we find that oil resources did appear to improve citizens’ view of their government even in the midst of a massive groundswell of popular support for democratization, the rentier state’s perceived bias in favor of wealthier citizens undermined support for the regime among those with less to gain from oil-related largesse.

On the whole, these results suggest that authoritarian rentier states may struggle with the equitable provision of benefits across class divides, undermining the rentier state’s ability to suppress dissent.

**Background**

The rentier state is a theory that has profoundly influenced political science research since Mahdavy (1970), Beblawi and Luciani (1987), and Anderson (1987) explored the effects of oil
resources on the nature of political institutions in the Middle East and Latin America. Since that time, a growing literature has documented strong associations between the presence of oil resources and more authoritarian forms of government (Ross 2001, 2012, 2015; Andersen and Ross 2014; Haber and Menaldo 2011). However, it is difficult to narrow down the full range of theories to a precise set of causal factors (Smith and Waldner 2021). One of the important mechanisms in the literature which we focus on in this article is the way that oil revenues may reduce demand for representation via lessening citizens’ tax burden.

Early modern European states’ demands for revenue and consequent increases in taxation are strongly linked to both increases in state infrastructural power and demands for more representation in the government (Weiss and Hobson 1995; Dincecco 2009; Levi 1989). Recent studies show that this historical pattern also tends to hold among contemporary states as states that collect fewer taxes are also less democratic (Slater, Smith, and Nair 2014). This feature of contemporary state development may be explained by the widespread availability of sovereign finance which encouraged state expansion without the need for growing the tax base (Migdal 1988; Queralt 2019). As such, the taxation mechanism remains one of the best explanations for how a state’s reliance on oil revenues could lead to more authoritarian government by reducing citizen claims on the state (Jones 2017).

However, the rentier state theory has its critics who allege that the theory is based on flawed cross-sectional comparisons (Waldner and Smith 2014; Herb 2005). The theory seems to best explain resource-dependent countries in the Middle East, which also happens to be the most authoritarian region in the world (Jamal and Tessler 2008). Despite the durability of authoritarian regimes in the region, it does not necessarily follow that authoritarianism is caused by states’ discovery of oil resources. Rather, there could be early factors in state development which predisposed Arab governments to form more authoritarian governments. The subsequent exploration of oil resources may have served to lengthen a given leader’s tenure but may not have affected the leader’s propensity to use authoritarian means to retain power, as plausibly occurred in the Arabian Gulf in the first half of the 20th century.
(Waldner and Smith 2021). Furthermore, oil resources are associated with negative outcomes that could shorten regime tenure, such as the outbreak of civil wars (Ross 2006; Fjelde 2009) and a reduction in economic development, the so-called Dutch disease (Corden 1984).

The main challenge in adjudicating these rival positions is the fact that we are studying a variable which we can almost never experimentally manipulate: oil resources. For example, to understand with complete confidence whether oil resources are the main prop behind the Saudi Arabia’s long-lived monarchical regime, it would be necessary to observe a Saudi Arabia both with and without oil resources. Comparing Saudi Arabia to other wealthy authoritarian nations such as Singapore is a limited form of inference as it is hard to find an appropriate comparison country. Furthermore, cross-sectional comparisons can obscure important anomalies, such as Kuwait, a country with ample oil resources yet also the longest-lived parliament in the Arab world (Crystal 1990; Gandhi 2008). Exploiting within-country variation in oil resources can at least partially alleviate these concerns (Ross 2015), but because oil resources are not exogenous to political development (Waldner and Smith 2014, 2021), it is difficult to make fully identified causal inferences from panel data sets alone.

In addition, we note that employing country-year observations introduces an ecological inference problem (King 1997). The theory operates on individuals or groups, but levels of oil resources at the country level and outcomes such as levels of democracy obscure heterogeneity in individuals’ responses to the rentier state. While limited to date (Cuesta et al. 2019; Paler 2013), experimental approaches hold significant promise for exploring heterogeneity in responses to the rentier state to know whether and to what extent the theorized mechanisms are in fact operating. In this paper, we particularly want to examine how much the rentier state will affect citizens differentially given their position in the wealth distribution.

It seems to follow logically from the nature of a redistributive regime that a person’s position in the wealth distribution would affect how they perceive government largesse. The poorest may not spend as much on goods covered by taxes or earn enough income for tax benefits to become appreciably large. By comparison, if the rentier state focused more on
pro-poor policies like conditional cash transfers and subsidized housing, they might be able to affect the views of the poor to a higher degree (Magaloni and Kricheli 2010; De La O 2013; Dodlova, Giolbas, and Lay 2017). In fact, if the poor perceive the rich as obtaining more of the benefits of the rentier state due to increasing inequality (Haggard and Kaufman 2012), then there is reason to believe that the rentier state could help create grievances rather than suppress them. For these reasons, in addition to the overall effect of the rentier state on actions and attitudes towards democracy, we also want to know whether its effects are conditional on factors we have reason to believe should matter for the comparative value of benefits obtained from the state.

**Research Design**

Our research design aims to experimentally test the taxation-representation part of rentier theory using individual level data in a country undergoing a regime transition. Algeria’s Hirak protest movement started in the spring of 2019 after the dictatorship had successfully weathered the regional protest movement known as the Arab Spring in the early 2010s. The Hirak movement was exceptional in its durability and scope; it persisted with weekly and often daily protests for an entire year until the arrival of COVID-19 in March of 2020 (Grewal, Kilavuz, and Kubinec 2019). The movement successfully forced leadership change with the retirement of Abdelaziz Bouteflika, a former military general who had ruled the country since 2005. However, up until the COVID pandemic, the military remained in firm control of the state. In a failed attempt to please the protesters, the military put forward a new presidential candidate who won in late 2020 in an election with minimal turnout.

This setting provides an ideal context in which to investigate the efficacy of the rentier state as it is a rare episode of mass contention in a state with significant oil resources. While Algeria’s petroleum resources never reached a per capita level of the small Gulf states, it possesses a considerable share of the world’s oil resources—12.2 billion barrels of proven
reserves—and for decades was able to sustain a quality of life above the regional average for its citizens. These resources were particularly important for the regime as it dramatically increased social spending during the Arab Spring in 2010 to prevent protest movements from growing out of control (Volpi 2014), a policy effort that successfully contained a nascent protest movement.

During the intervening years, however, the price of oil collapsed and Algeria’s burgeoning population forced continued policy changes to the rentier model in order to contain growing public debt.\(^1\) Cuts to public goods like education spurred sporadic yet ongoing protests prior to 2019.\(^2\) Explaining exactly why 2019 was the year that these grievances culminated in a protest movement is beyond the scope of this article, yet it is important to note that the distributive consequences of the rentier state were a prime reason for popular disenchantment with the long-lived regime. Algeria’s very high unemployment rates among youth, whose parents could trust in stable employment assuming they obtained a reasonable level of education and maintained good relations with the regime, undercut the perceived generosity of the state.\(^3\)

As a result, during an episode of regime contention like the Hirak it is clear that there are a significant number of people who are upset with the regime’s policies and, by extension, with the performance of the rentier state. Given the salience of the issue, it would seem to be an appropriate time to ascertain to what extent the rentier nature of Algerian institutions helps depress protests. By the presence of protests we might infer that the rentier state’s depressive effect on grievances is weaker than it was before, but the very real nature of regime contention also suggests that the rentier state’s future is far from certain. As a result, Algerians may be much more open to considering the pros and cons of their system of government, questions which would be fairly abstract while the dictatorship was stable.

It is important to note as well that concerns over elite bias in institutions figured promi-

\(^1\) See https://www.reuters.com/article/us-algeria-economy-idUSKBN2052FL.
\(^2\) See https://www.reuters.com/article/uk-algeria-protests-idUKKCN1G51ZQ.
nently in the protest movement, suggesting that wealth endowments may have affected how people perceived the relative importance of the rentier state. Survey data from the Arab Barometer in 2019 found a plurality of respondents (41%) cited corruption and the quality of public services as the most important issues facing the country (Robbins 2019, 4). Unsurprisingly, the government’s response to the Hirak tried to appear as though it was rooting out corruption, indicting prominent regime figures and businesspeople on abuse of power and unjust enrichment (Marwane 2021). As a result, we had prior reason to believe that not only the quality of the rentier state was at issue, but also whether benefits were being equitably distributed across class divides in the country.

To test the rentier theory, we aim to experimentally increase people’s knowledge about the extent of their benefits from Algeria’s oil resources. We pre-registered two hypotheses prior to our study, which we list below:

H1: A higher level of gasoline subsidies relative to neighboring democratic countries will encourage pro-regime attitudes and actions among citizens in a dictatorship.

H2: A lighter tax burden relative to neighboring democratic countries will encourage pro-regime attitudes and actions among citizens in a dictatorship.

As with any manipulation, we need to be aware of what the range of plausible counterfactuals is. As mentioned previously, it would seem impractical to try to compare Algeria to a counterfactual Algeria without oil or a counterfactual Algeria with democracy: presumably so many other institutional and political variables would also change such that posing such a comparison to Algerians would result in unintelligible answers.

Instead, we compare Algeria to its immediate neighbor, Tunisia. Tunisia is a natural reference point because it has a long shared history with its neighbor, including decades spent under French colonization and similarly authoritarian institutions in the post-colonial
period. However, Tunisia is different from Algeria in two crucial aspects: first, Tunisia transitioned to democracy in 2010 during the heady days of the Arab Spring. Second, Tunisia has never had access to the vast natural resources of its neighbor. As such, we can use Tunisia as a plausible counterfactual for the taxation and representation trade-off: Tunisia has a much more representative and accountable government, but also a much higher tax burden for a similar level of social services. If the rentier nature of state revenue does in fact affect what people expect from their government, then Tunisia could serve as a baseline for Algerians to evaluate the generosity of the benefits they obtain in exchange for continued authoritarianism. In other words, if Algeria did not have oil, it could plausibly look like Tunisia, a more democratic state with a less extensive welfare state. Especially considering the heavy-handed patronage employed by the Algerian state to stifle the diffusion of protests from the earlier Arab Spring, Tunisia represents a relevant alternative path for an Algeria with fewer oil resources.

Furthermore, we think that Algerians were quite likely to rely on comparisons to neighboring countries during their period of regime contention due to the well-known heuristics of availability bias (Weyland 2012). Tunisia may not be the perfect counterpoint to Algeria, but it is one that would be accessible to most Algerians, and it is famous throughout the region for its ongoing experiment with democracy.

It is easy to see that this comparison, like all attempts to approximate a counterfactual with empirical data, is a heuristic and prone to limitations. For example, it is quite plausible that Tunisia’s transition to democracy and Algeria’s authoritarianism had little to do with the former’s lack of resources and the latter’s abundance. However, if such a contention is true, then informing Algerians about the nature of Tunisian public goods should result in null treatment effects and falsification of the rentier thesis. If the rentier thesis does correlate with regime type, then comparisons between oil-rich authoritarian countries and resource-poor democratic countries are a logical implication of the theory. In a sense, this experiment is directly testing the implied counterfactuals of the panel data observational
studies underpinning the resource curse literature.

Of course, we could also have tried to compare Algeria with other resource-rich countries so long as the regime type in these countries differs, such as regimes that are authoritarian but more stable or regimes that are more democratic yet have extensive natural resources. While this comparison in principle is relevant—these counterfactuals approximate other ways that a country’s institutions or resources could change vis-a-vis rentier theory—practically speaking it is more difficult to compare Algeria to such a country given the relatively low salience and greater heterogeneity of plausible candidates, such as Saudi Arabia or Norway.

To make this comparison concrete, we designed two experimental comparative treatments based on three distinct policy regimes: gasoline subsidies, taxi rates and value-added taxes (VAT). As a petro state, Algeria passes on some of its hydrocarbon revenues to citizens by subsidizing gasoline, resulting in a divergence in gasoline prices between the Algeria and Tunisia. Gasoline subsidies have previously been shown to be inimical to democratization (Fails 2019), suggesting they are an important mechanism besides tax burdens through which rentier largesse affects political calculations.

Though not all Algerians own cars, the difference in gasoline prices between Algeria and Tunisia should also result in differences in taxi prices, which means the influence of subsidies will be indirectly transmitted to most of the population. To estimate gasoline prices, we use historical gas pump prices for both countries.\textsuperscript{4} Estimating taxi prices is somewhat more difficult, though we are able to use crowd-sourced websites to come up with plausible average rates of taxi fares for both countries.\textsuperscript{5} In terms of taxation, Algeria’s VAT rate of 19% is nominally the same as Tunisia’s, but is applied to far fewer goods according to research on VAT coverage rates by the IMF.\textsuperscript{6}

We then use these observed rates to determine how much an individual might spend on gasoline, taxis or the VAT in Tunisia given a similar amount spent in Algeria. Table 1 shows

\begin{table}[h]
\centering
\begin{tabular}{ |c|c|c| }
\hline
Policy & Algeria & Tunisia \\
\hline
Gasoline& $x$ & $y$ \\
\hline
Taxi& $z$ & $w$ \\
\hline
VAT& $a$ & $b$ \\
\hline
\end{tabular}
\caption{Comparison of gasoline, taxi prices and VAT rates between Algeria and Tunisia.}
\end{table}

\textsuperscript{4} See https://www.globalpetrolprices.com/Algeria/gasoline_prices/.
\textsuperscript{5} See https://www.numbeo.com/taxi-fare/country_result.jsp?country=Algeria.
these calculations for a hypothetical amount of 100 DZD spent in Algeria. Conditional on receiving the treatment, a respondent will receive the gas treatment if they reported owning a car and a taxi treatment if they did not. We report these two treatments as one combined treatment in the results.

Table 1: Treatment Calculations

<table>
<thead>
<tr>
<th>Type</th>
<th>Amount Spent in Algeria</th>
<th>Counterfactual Spent in Tunisia</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gasoline</td>
<td>100 DZD</td>
<td>200 DZD</td>
</tr>
<tr>
<td>Taxis</td>
<td>100 DZD</td>
<td>117 DZD</td>
</tr>
<tr>
<td>Spent on VAT</td>
<td>19 DZD (for 100 DZD in Goods)</td>
<td>46.31 DZD</td>
</tr>
</tbody>
</table>

As can be seen, hypothetical expenditures on both gas and goods covered by the VAT are roughly double what a person in Tunisia might pay relative to Algeria. Expenditures for taxis in Tunisia are not twice as high as in Algeria likely due to the fact that taxi rates are kept arbitrarily low in Tunisia, which has resulted in taxi driver protests in recent years. In any case, it is clear that the rentier state in Algeria does permit less taxation and a higher rate of subsidy of petrol relative to the less well-endowed Tunisia. We believe that this information—at least in this precise a form—would be relatively novel for Algerians and would provide an informative baseline for them to evaluate the amount that they are benefiting from the rentier state and whether that trade-off might justify continued authoritarianism.

The treatment text is as follows:

Based on what you entered, you paid /respondent amount/ DZD for [gasoline/taxis/VAT goods] last year. If you lived in Tunisia, a democracy, where [gas/taxis/VAT] receives fewer subsidies, you would probably have spent /re-calculated respondent amount/ DZD on [gas/taxis/VAT].

The inclusion of the phrase, “a democracy,” was an attempt to ensure that respondents would make the correct inference as to why Tunisia was the baseline for them to comparison with. However, out of concern that this suggestion would be too subtle, we also added the following text to 50% of the treatments:

However, Tunisia also has free and fair elections where people can hold politicians accountable.

This additional line of text provided some additional internal validity at the risk of some heavy-handedness. This treatment-within-treatment will help us understand if respondents’ perceptions of the treatment is influenced by more subtle or more direct phrasing.

While these treatments provided information specific to individuals about their exposure to the rentier state, we also employed a treatment which contained general information about Algeria’s oil resources. We showed the following text to a subset of respondents:

For every 100 DZD the Algerian government collected in 2016, 34 DZD came from oil and the rest (66 DZD) came from people’s taxes. Since then, however, the government has become *more* reliant on oil for each 100 DZD it spends. By last year oil as a share of the government’s money accounted for 40 DZD for every 100 DZD collected.

By comparison to the individual level treatments, this treatment examines how Algerians might respond to information about the overall state of their oil resources. It is likely that this information is relatively novel for respondents as it involves specifics about how much the Algerian government currently relies on oil resources. Theoretically, we would expect this information to have similar kind of effect to the individual treatments because it is showing that the government is obtaining more revenue from oil resources as opposed to other sources such as taxes.

As outcome measures, we consider both Algerians’ attitudes towards their government and its provision of public goods, and also their willingness to take specific actions which
could be interpreted as ways of either supporting or opposing the regime. By doing so we can better capture whether people’s underlying perceptions of the regime change and whether these perceptual changes manifest themselves in actions. It could be possible that the rentier effect could manifest itself in pro-regime attitudes but fail to rise to a level at which it changes Algerians’ behavior.

**Attitudinal Measures**

Our attitudinal measures come from the following survey question:

> How would you rate the government’s performance in these areas on a scale of 1 to 10:

<p>| | |</p>
<table>
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</tr>
</thead>
</table>
| 1 | Providing employment for its citizens  
| 2 | Helping Algerians obtain health care and a quality education  
| 3 | Ending corruption among government officials  
| 4 | Reforming in response to citizens’ concerns  
| 5 | Maintaining stability and social order |

**Behavioral Measures**

Our behavioral measures come from the following survey question:

> On a scale of 1 being very unlikely and 10 most likely, are how likely are you to take the following actions in the next 3 months:

<p>| | |</p>
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</table>
| 1 | Participate in a street protest  
| 2 | Visit a government official to complain about government services  
| 3 | Move personal funds to bank accounts overseas  
| 4 | Transfer funds from Algerian currency to other currencies |
It is important to note that our actions include those which can unambiguously represent anti-regime actions, i.e. joining street protests, and others that are somewhat more ambiguous. Transferring funds into and out of Algerian currency or moving money overseas can be a way of expressing confidence in the regime with one’s own resources, though it does not necessarily mean that a respondent is trying to undermine the regime. Using multiple behavioral measures allows us to track the effect of the treatment across diverse ways of understanding confidence in the regime.

All of the outcomes and experimental treatments were pre-registered, although the additional treatment text mentioned above was added after the pre-registration was filed. We will also examine some treatment interactions, particularly with respondent wealth, which were not included in the pre-registration but which we believe to be crucial for understanding the aggregate results we report.

Data

Collecting survey responses in the midst of a national upheaval in a highly repressive authoritarian regime necessitates employing techniques that are more flexible than traditional face to face surveys. To do so, we recruited 5,968 Algerian residents from April to July 2019 via advertisements on Facebook. Facebook is by far the most popular social medium in the Middle East, used widely across age demographics and by official authorities (Dennis, Martin, and Wood 2016). Our advertisements, which asked for Algerians’ opinions about the protests, attracted considerable attention, allowing us to recruit our nearly 6,000 respondent sample with a budget of only $5,000, which included providing a 100 DZD mobile credit (approximately $0.75) to all who finished the survey.\(^8\) Aside from the collection of mobile numbers, the survey was anonymous, permitting more confidence in the safe and valid collection of opinions about Algerian politics.

\(^8\) Not all respondents received a credit, either because they did not provide a mobile number or they did not provide a valid mobile number.
The sample of course did not conform to Algeria’s population demographics, as can be seen in Table 2. The differences are most pronounced for age demographics, with over-representation in the under 30 groups and relatively few respondents over the age of 65. On the other hand, we matched census totals for the total number employed and also for sex.

To adjust for potential bias, we implemented multiple regression with post-stratification (MRP), a powerful method utilized heavily in online survey research (Wang et al. 2014). To do so we constructed a contingency table of the population totals of Algerians by district, age and gender, and re-weighted our model predictions by each of the 864 cells in the contingency table. For this reason, we believe that we can plausibly interpret our estimates as being nationally representative along these three dimensions. The large size of our sample further allows us to be more confident that this method will work well. For example, even though only 2.5% of the sample is over the age of 55, this subgroup still totals 131 respondents, giving us reasonable statistical power even for this older demographic.

Table 2: Comparison of Algerian Sample Demographics to Census Proportions

<table>
<thead>
<tr>
<th>Variable</th>
<th>Sample Proportion</th>
<th>Census Proportion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>48.7</td>
<td>49.6</td>
</tr>
<tr>
<td>Male</td>
<td>51.3</td>
<td>50.4</td>
</tr>
<tr>
<td>18-19</td>
<td>10.5</td>
<td>1.2</td>
</tr>
<tr>
<td>20-24</td>
<td>25.8</td>
<td>15.7</td>
</tr>
<tr>
<td>25-29</td>
<td>20.2</td>
<td>14.2</td>
</tr>
<tr>
<td>30-34</td>
<td>18.9</td>
<td>11.4</td>
</tr>
<tr>
<td>35-44</td>
<td>16.0</td>
<td>18.1</td>
</tr>
<tr>
<td>45-54</td>
<td>6.3</td>
<td>12.4</td>
</tr>
<tr>
<td>55-64</td>
<td>2.1</td>
<td>7.4</td>
</tr>
<tr>
<td>65+</td>
<td>0.3</td>
<td>7.6</td>
</tr>
<tr>
<td>Rural</td>
<td>15.4</td>
<td>31.9</td>
</tr>
<tr>
<td>Suburban</td>
<td>19.5</td>
<td>NA</td>
</tr>
<tr>
<td>Urban</td>
<td>65.1</td>
<td>68.1</td>
</tr>
<tr>
<td>Employed</td>
<td>36.2</td>
<td>37.4</td>
</tr>
<tr>
<td>Housewife</td>
<td>7.4</td>
<td>NA</td>
</tr>
<tr>
<td>Retired</td>
<td>2.7</td>
<td>NA</td>
</tr>
<tr>
<td>Student</td>
<td>30.6</td>
<td>10.0</td>
</tr>
<tr>
<td>Unemployed</td>
<td>23.0</td>
<td>10.5</td>
</tr>
</tbody>
</table>
While much of the data is straightforward to analyze given that it was collected via an online instrument, we did need to perform additional validation to create a measure of socio-economic resources (SES). To do so, we employed a latent variable model (Kubinec 2019) and collapsed a wide range of indicators of both income and wealth. We did so because, as is often the case with survey data, considerable measurement error exists in any single indicator, including monthly income. Furthermore, to understand how respondents may be affected by the rentier state, we need to know the respondents’ overall level of resources rather than simply their current monthly income. Some respondents who were students, for example, may have very wealthy families and consequently a high standard of living even if their monthly income is zero.

The inputs to our latent variable model included whether a respondent owned a car, a farm, a small, medium or large business; a house, whether they had a domestic or foreign bank account, sex, age, opinions about the state of the economy, level of education, a categorical measure of monthly income, the respondent’s governorate, location (rural, urban or suburban), and also the amounts respondents reported spending on fuel, taxis and VAT goods in the experimental treatments. Combining all of these with appropriate statistical distributions (Kubinec 2019), we then estimated an SES scale which is shown in Figure 1. Although the scale is continuous, it shows discrete breaks due to the fact that categorical variables with a strong effect on SES (ownership of homes or businesses) were included in estimation. The full list of discrimination parameters (i.e., factor scores) for all covariates in the SES scale is shown in Figure 2 in the appendix.

It is important to note that the SES scale is a latent variable, and as such it does not need to follow a power law distribution like reported income. Rather, it is useful for making relative comparisons between respondents in terms of their wealth position rather than the absolute amount of income or they possess. We do note that relatively few of the respondents are either very poor or very rich (scores above or below +/- 5), with the majority reporting at least some income or other source of support. In other words, while respondents were not
Figure 1: Histogram of SES Scale from Survey Data
Results

We first report the average treatment effects (ATEs) for each treatment group in Figures 2 and 3. The taxi and gas treatments are combined into one treatment result labeled fuel subsidy, while the change in oil revenues treatment is listed separately. To calculate ATEs adjusted with MRP, we first predicted average values from the 0 to 10 scales used to evaluate either the respondent’s attitude towards the government or the respondent’s likelihood of engaging in a certain type of behavior for both treatment and control. These predictions were then adjusted using the Algerian census data with MRP as discussed previously, and as such are plausibly representative of the population, at least in terms of the distribution of gender, age and sex by district. To obtain an ATE, we then subtracted the treatment average predicted value from the control average predicted value.

As can be seen, the adjusted ATEs for attitudinal outcomes in Figure 2 show that receiving information about an individual’s tax burden, relative level of fuel subsidies or government’s increasing reliance on oil revenues causes an increase on average among our respondents in terms of improved perceptions of the government’s performance. The effect is quite stable, of medium strength (roughly +0.3 to +0.5 on a scale of 0 to 10), and holds true for the three different types of treatments.

By comparison, the predicted ATEs for the behavioral outcomes show much lower movement. Only for one outcome, complaining to a government official, do we see statistically significant differences, and these are also smaller than the attitudinal effects (approximately +0.2 to +0.3). For the other outcomes, confidence intervals indicate few differences which suggest meaningful treatment effects. When we average over the sample heterogeneity we do not observe movement in one direction or another.

In the appendix we report the treatment interactions with the additional text incor-
Figure 2: Predicted Values (ATEs) by Attitudinal Outcome, Adjusted with MRP

Estimates are the difference of the predicted values of the 0-10 outcome assessing the government's performance between treatment and control. Estimates are adjusted with MRP to match Algerian census totals.
Figure 3: Predicted Values (ATEs) by Behavioral Outcomes, Adjusted with MRP

Estimates are the difference of the predicted values of the 0-10 outcome assessing the government's performance between treatment and control. Estimates are adjusted with MRP to match Algerian census totals.
porated about Tunisia’s free and fair elections. These results do not show any noticeable increase or decrease in treatment effectiveness, suggesting that the simpler wording was able to communicate the nature of the trade-off we wanted respondents to make between Algeria and Tunisia.

**Wealth as a Moderator**

However, as we mentioned earlier, the effect of our treatment should be conditional on a respondent’s socio-economic resources. Greater wealth could indicate more significant benefits from the welfare state in exchange for a proportionally greater decrease in taxation. For this reason, we interact each treatment with the SES scale we explicated previously, and we show the results for this interaction in Figure 4 for the attitudinal outcomes and Figure 5 for the behavioral outcomes. Due to the large number of treatments and outcomes, each plot shows a comparison between the predicted outcome for control and one treatment group across values of the SES scale. The treatment group is shown in grey and the control group in red. As with the sample average effects, these results are also adjusted with MRP for representativeness.

These interactions reveal important treatment heterogeneity for the behavioral outcomes in Figure 4 that is masked by the sample average effects. While there are differences in size and strength across treatments, the treatment effect of encouraging stronger perceptions of the government’s performance is concentrated among the wealthy. Among poorer respondents, providing the treatment either had a null effect or even a negative effect on their attitudes towards the government. It is interesting as well that the lines in Figure 4 all slope upwards, i.e., the wealthy almost always have a more positive response to the treatment than the poor.

Figure 5 shows the same patterns as Figure 4, though treatment heterogeneity is strongest for protest intentions. Very poor respondents tended to report much higher willingness to protest following the receipt of information, indicating they were not particularly impressed
Estimates are the difference of the predicted values of the 0-10 outcome assessing the government’s performance between treatment and control. Estimates are adjusted with MRP to match Algerian census totals.

Figure 4: Predicted Values (ATEs) Conditioned by SES Scale, Attitudinal Outcomes
Figure 5: Predicted Values (ATEs) Conditioned by SES Scale, Behavioral Outcomes

Estimates are the difference of the predicted values of the 0-10 outcome assessing the government’s performance between treatment and control. Estimates are adjusted with MRP to match Algerian census totals.
with the government’s generosity, while the wealthy became much less willing to protest. The effect is sizable and reaches nearly -2 points on the scale for the fuel subsidy and VAT treatments among the top end of the income distribution. We do not observe the as strong divergences for less directly political outcomes such as moving funds overseas or switching currencies, though again when a relationship can be identified, it shows that the wealthy are less likely to take actions which indicate lower confidence in the regime such as switching currencies.

**Opinion about Protests as a Moderator**

While we believe that SES is the most theoretically relevant treatment moderator, we look at other potential moderators to provide context for these findings. We first examine possible treatment heterogeneity by the preferences that respondents held about the Hirak movement before observing the treatment. Figures 6 and 7 show the attitudinal and behavioral results respectively for the treatments by subgroups defined by respondents’ answers to the question, “do you support or oppose the goals of the current wave of protests in Algeria?” As is evident, there are more respondents who reported supporting the protests, and as such those categories have more precise estimates.

On the whole, the results show that opinion about protests has a moderating effect on attitudes but not behaviors, at least in general. The attitudinal results show that the positive effects on attitudes hold for those who support the protests; i.e., their views of the government’s performance increase approximately +0.2 to +0.5 on average. By contrast, those who oppose the protests show negative effects in response to the treatment; however, it is somewhat difficult to make firm conclusions as the effects are imprecisely estimated. For behaviors, there do not appear to be clear patterns other than for the outcome of moving funds overseas. Those who opposed the protests were much less likely, between -1 and -2 points, to report wanting to move funds overseas. While intriguing, and fairly precisely estimated, it is difficult to comment on this particular finding as the other subgroups do not
Figure 6: ATEs Conditioned by Opinion About Protests, Attitudinal Outcomes

Estimates are differences in the 0-10 outcome assessing the government's performance between treatment and control. Estimates are adjusted with MRP to match Algerian census totals.
Figure 7: ATEs Conditioned by Opinion About Protests, Behavioral Outcomes

Estimates are differences the 0-10 outcome of the likelihood of a given action between treatment and control. Estimates are adjusted with MRP to match Algerian census totals.
Opinion about Corruption as a Moderator

Next we examine beliefs about corruption in the government as a potential moderator of the treatment. We examine respondent opinions about corruption because it is an important factor in how respondents might evaluate the rentier state: if they believe the rentier state is less corrupt, they may also assess its redistributive performance more positively. Figures 8 and 9 show the results for attitudinal and behavioral outcomes respectively subset by respondents’ opinions about the level of corruption in government (question: “In your opinion, what is the level of corruption among government officials in Algeria today?”). In a similar pattern to the protest support moderator, those who believe that corruption is quite high show stronger effects from the treatment for attitudinal outcomes. Again, there do not appear to be very clear patterns for the behavioral outcomes, with substantial variability across treatments within outcomes.

Discussion

No single empirical test can conclusively either prove or disprove a theory with as wide applicability as the rentier thesis. However, we believe that this experiment’s realistic design in a setting in which regime change is very much a possibility provides a window into the central trade-offs in the theory. If Algerians do consider the oil-funded redistribution as an acceptable price for continued autocracy—or at least did so in the recent past—then we should be able to identify these effects during this period in which Algerians are making crucial decisions about whether and what kind of new regime to support. On the whole, the rentier state does, on average, increase support for the government in terms of improving opinions about the governments’ performance and ability to provide public goods. Apparently, respondents do see the governments’ willingness to use oil resources to reduce tax burdens and
Figure 8: ATEs Conditioned by Opinion About Government Corruption, Attitudinal Outcomes

Estimates are differences in the 0-10 outcome assessing the government's performance between treatment and control. Estimates are adjusted with MRP to match Algerian census totals.
Figure 9: ATEs Conditioned by Opinion About Government Corruption, Behavioral Outcomes

Estimates are differences in the 0-10 outcome assessing the likelihood of taking a particular between treatment and control. Estimates are adjusted with MRP to match Algerian census totals.
increase fuel subsidies as an example of good governance.

However, for the sample as a whole, we do not see these same effects for behavioral outcomes. The treatment had only a mild effect on increasing willingness to complain to government officials. These attitudinal changes do not apparently manifest themselves in terms of interest in actions taken by respondents to support or oppose the regime—at least for the sample as a whole. This outcome is not particularly surprising given that taking a costly action like protesting the regime may require much more than a moderate shift in perceptions about the regime’s competence.

When we examine treatment moderation using our SES scale, it is clear that the treatment is powerfully conditioned by wealth. Those at the top end of the wealth distribution were considerably less likely (two to three points out of a 10-point scale) to report a willingness to protest after receiving a treatment, while those at the bottom of the distribution became more likely to protest after receiving the treatment. These conditional effects also hold for attitudinal outcomes and also some other behavioral measures (movement of funds overseas).

These results follow from a framework in which rulers are trying to mitigate threats to their rule but face varying challenges from the elites and the masses. In terms of threats from below, if inequality increases and the rich are able to capture the lion’s share of the rentier state’s public goods, then the willingness of the poor to engage in costly mobilization to oppose the regime also rises (Acemoglu and J. Robinson 2006; Boix 2003). Similarly, as Dunning (2008) shows, the rentier state can help mitigate private sector inequality, but only if public goods represent true redistribution to the poor. For these reasons, to avoid popular mobilization, rulers should try to make the rentier state as inclusive as possible, which Algeria was able to do during the earlier Arab Spring protest movement in 2011.

However, rulers also need to keep elites co-opted, who often represent a more immediate threat in terms of regime survival (Gehlbach and Keefer 2011; Marinov and Goemans 2014; Ansell and Samuels 2014). In fact, Geddes, Wright, and Frantz (2014) show that oil has its greatest effect on authoritarian durability by avoiding coups from rival factions. Popular
mobilization, by contrast, is relatively rare and can also be contained with repression (Bellin 2004). As a result, it could be a natural outcome that over time rentier states become more elite-biased as political coalitions evolve and rulers aim to maximize their longevity (Waterbury 1983; Waldner 1999; Haber, Razo, and Maurer 2003; Acemoğlu and J. A. Robinson 2008). As a consequence, a redistributive policy favoring elites could be optimal from the perspective of a given leader, but suboptimal for the long-term survival of the regime if it eventually leads to counter-regime mobilization among the poor.

Conclusion

Within the vast literature on the rentier state, our paper contributes to our understanding of how and when state control over natural resources may still fail to contain dissent and prevent democratization. Of course, rentier state theory has never proposed that access to rents will always prevent uprisings, but it is still difficult to predict when the rentier state’s redistributive capacity is sufficient to ensure regime stability. Our study, employing an original sample of Algerian citizens during a period of mass mobilization, helps us examine the politics of the rentier state when the bargain underpinning an authoritarian regime is contested. By manipulating citizen’s information about the generosity of the rentier state during this critical time, we can causally identify the impact of redistribution on both attitudes and the intention to take costly political action such as protests.

As can be expected, our granular data combined with a causally-identified research design both answers questions and raises others. We are able to show that increasing Algerians’ information about the extent of the rentier state relative to neighboring countries does improve their perception of regime performance. As such, these experimental results suggest that core parts of the rentier theory concerning the bargain that citizens make with an authoritarian regime do have merit. At the same time, strong heterogeneity across politically salient divides—especially in terms of class—suggest that in times of popular mobilization,
perceptions of the rentier state are far from uniform. Our treatment seems to have produced a backlash effect among poorer Algerians, substantially increasing their reported willingness to engage in protest activity after being informed about the extent of the rentier state.

These results point to the inclusivity of the rentier state as a critical variable underpinning its effectiveness at containing protest. Even if the state remains in regional perspective a credible provider of public goods, the relative share of public good provision for the poor versus the rich may still be an issue of contention. If Algerians come to the conclusion that the rentier state is biased in favor of the rich and powerful, it is difficult to overcome that grievance solely through general reminders of the extent of redistribution. Under what conditions regime elites are able to manage this difficult trade-off between elite concerns and mass unrest is an interesting question for future research.

References


