

# Regime Type, Coalition Size, and Consumer Subsidies as a Form of Goods Delivery

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August 2016

## Abstract

A common argument in the political economy literature is that rulers who are accountable to larger coalitions will allocate spending toward public goods rather than particularistic, private goods that benefit the few. Price subsidies for energy and public utilities do not fit this claim comfortably. These subsidies, while delivered broadly, are costly and distortionary, crowding out other forms of public spending. Yet, attempts to reduce them are often met with vigorous political protests. New data on the extent to which countries subsidize coal, oil, natural gas and electricity allow a fresh look at long-standing questions in political economy research about policy outputs. First, do democracies provide subsidies at higher rates than non-democracies? Second, do other institutional forms that create accountability to broader segments of society provide greater subsidies?

Prepared for delivery at the 2016 annual meeting of the American Political Science Association, Philadelphia, September 1-4, 2016.

Subsidies for electricity, fuel, water, food and other basic goods are a fruitful, but perhaps neglected, subject for political economy research. From a budgetary standpoint, these subsidies can be a significant burden on the state, and substantial evidence indicates that the benefits flow disproportionately to upper income groups that use more of the subsidized goods but need the subsidies less. From an economic perspective, subsidies distort incentives for energy and water consumption, starve public utilities of funds for investment in infrastructure for delivery systems, and crowd out other forms of public spending that would be more productive. Yet, despite these downsides, subsidies are politically salient. Measures to reduce subsidies have produced significant political protests in many countries (Auvinen 1996).

Focusing on subsidies for fuel and energy, this paper tests propositions that connect the level and type of goods provision to the methods by which rulers are chosen and the size of the constituencies that support them. A common argument in the literature<sup>1</sup> is that rulers who are accountable to larger coalitions will allocate spending toward public goods rather than particularistic, private goods that benefit the few. Since public goods tend to be welfare-enhancing, the story goes, social welfare is greater where political institutions make rulers accountable to broader segments of the population. Subsidies, however, do not fit neatly into this public versus private goods dichotomy. Though typically delivered broadly and non-exclusively, they tend to generate negative economic externalities.

Country-level data on the extent of subsidies has become available recently, facilitating cross-national empirical tests on the relationship between political institutions and the extent of subsidies. For example, the IMF has released data on the levels to which countries subsidize coal, oil, natural gas and electricity. These data, covering more than 160 countries, allow a fresh look at two basic questions. First, do democracies provide subsidies at higher rates than non-democracies? Second, do other institutional forms that create accountability to broader segments of society provide greater subsidies?

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<sup>1</sup>For example, Bueno de Mesquita et al. (2003).

# 1 Consumer Subsidies as Form of Goods Delivery

A significant body of research explores how political institutions structure the incentives that policymakers face when determining the level and type of state spending. In general, this work portrays policymakers as rational actors who wish to retain office and, in many cases, keep as much revenue as possible for their personal use. Accordingly, they allocate minimally-sufficient resources in a manner that favors the constituencies that enable them to gain office. Since the mechanisms by which policymakers obtain power vary across polities, there is corresponding variation in the competitiveness of the selection process and in nature of the political coalitions they must build to retain office. Policymakers in different institutional contexts thus have different incentives for how they allocate resources.

These incentives can affect spending in at least three ways. First, the level of spending is a function of the degree to which selection mechanisms induce rulers to spend greater resources in order to maintain power. Where institutions for selecting rulers create strong and vibrant competition between rivals, rulers will be induced to expend greater resources to attain office compared to scenarios in which competition is weak or non-existent.

Second, the scope of the spending – narrow versus broad – depends upon the size and location of the coalition that rulers must build to hold power. Where institutional forms create a dependence on broad constituencies, spending will be weighted more heavily towards goods that are distributed broadly. Conversely, when selection mechanisms make rulers dependent on narrower segments of society, spending is expected to be distributed in more targeted ways.

Third, the social welfare impact of the spending is determined by the nature of the goods that rulers have incentives to provide. Politicians seek to deliver resources according to the policy preferences of those that support them. In the abstract, we cannot easily specify the extent to which these policies are welfare-enhancing.

Yet, a common argument in the literature is that broadly-distributed spending is welfare-enhancing, while more narrowly-targeted spending serves particularistic interests at the expense of public welfare. To illustrate, Lizzeri and Persico (2001) assume a trade-off between spending on public goods that cannot easily be directed to specific groups and pork-barrel spending or transfers that can be targeted more readily. Politicians typically have greater ability to claim personal credit for the provision of particularistic goods such as pork-barrel spending. Likewise, in Bueno de Mesquita et al. (2003) rulers choose between public goods that benefit all members of the polity and private goods that benefit only the members of their winning coalition.

Rickard (2009), by contrast, distinguishes between broad and narrow transfers without making assumptions about the relative social welfare of such transfers. This perspective appears to be more helpful when considering the role of consumer subsidies for fuel, electricity, water, food, and other items, since these subsidies have several important features that, in combination, lead to an uncomfortable fit with many theories of goods provision.

First, although subsidies could in theory be applied in a targeted fashion, such measures tend not to be used in practice. Means-testing of subsidies requires significant administrative capacity as well as accurate data about household income (Adams 2000; Gómez-Lobo and Contreras 2003). In cases where attempts are made to target delivery of subsidies, there is often considerable leakage in the system. Political incentives, moreover, tend to favor broadening of subsidies rather than their restriction (Jain 2006).

Subsidies are thus a significant financial burden, though the costs do not always appear as spending in state budgets. In a study of 40 countries, the International Energy Agency measured the costs of fossil fuel subsidies by multiplying fossil fuel usage by the difference between world market prices and end-user prices for these fuels. Using this methodology, the mean rate of subsidy was 4.8 percent of GDP, and countries like Egypt, Algeria, Turkmenistan, and Uzbekistan devoted more than 10 percent of GDP to fossil fuel subsidies (International Energy Agency 2015).

The bulk of subsidies flow to upper income segments of society. Arze del Granado et al. (2012), for example, find that in developing countries the top income quintile receives six times more benefit from fuel subsidies than does the bottom income quintile. Electricity rate subsidies are particularly regressive. Since poorer populations may have low access to the electric grid to begin with, and since upper income households use much more electricity, only about 20% of the benefits from electricity subsidies flow to the poorest 40% of the population across sub-Saharan African countries (Alleyne et al. 2013). The uneven distribution of these subsidies does not negate their importance for low-income households that receive them, however.

Second, subsidization of fuel, electricity, and other utilities can impose significant social welfare costs and negative externalities. Spending on subsidies serves to crowd out other forms of state spending. In terms of social welfare, channeling this money into other forms of public service delivery would yield greater benefits. Additionally, subsidies that artificially lower the costs of energy below market prices encourage overconsumption of resources. Burning fossil fuels in particular produces massive negative externalities due to air pollution and their effects on climate change.

Costs are much greater once we account for these externalities. According to an International Monetary Fund study, once the costs of pollution are factored in, the global cost of post-tax energy subsidies in 2011 was \$2.0 trillion, which is about 8.5 percent of total government revenue measured globally (Clements et al. 2013). The study claims that accounting for these costs when pricing energy would yield a 15% reduction in global CO<sub>2</sub> emissions (p. vii).

Additionally, subsidizing utility rates, which is often accomplished through public utility companies that absorb the costs of the subsidies, starves these entities of resources that could otherwise be used to expand electric grids and water pipeline networks, as well as improve the efficiency of these delivery mechanisms. Price subsidies for those who presently have access to these services thus can prevent or delay access for others.

Third, more so than other forms of public spending or promises to deliver public services, the effects of subsidies for energy, water, and food are very tangible. Price increases are noticed immediately and become politically salient.<sup>2</sup> Yet, the costs of providing these subsidies are often hidden because they do not necessarily appear in government budgets. Instead, they are absorbed in the form of lost revenues for utility companies, artificially low prices for farmers selling agricultural commodities, and so forth. A focus group in Morocco, for example, found that a majority of participants were not even aware of the subsidy for butane and that who were aware of the subsidy significantly underestimated its size (Commander 2012).

Since non-targeted subsidies do not require significant administrative capacity, they are attractive alternatives to other forms of social support when state capacity is lacking (Alleyne et al. 2013). Proposals to reform subsidy programs and use the savings for other forms of public services may be received with skepticism due to the lack of credibility that politicians will actually deliver the promised alternatives.

Taken together, these factors illustrate that a focus on consumer subsidies as a form of goods delivery can fruitfully bring to light some problematic aspects of existing theories. As implemented in practice, these subsidies share with public goods the attributes of non-excludability and breadth of distribution but not the expected positive contribution to overall social welfare. The theorized connection in Bueno de Mesquita et al. (2003) and elsewhere that incentives to deliver benefits broadly leads to provision of welfare-enhancing public goods should not be accepted too readily.

In the next section, accordingly, I explore the possible theoretical connections between institutional forms and the incentives for consumer subsidies.

## **2 Development of Some Testable Propositions**

The logic above states that political institutions affect the level, scope, and nature of goods that policymakers are incentivized to provide and finds that consumer subsidies

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<sup>2</sup>Bread riots in Middle Eastern countries in the 1970s, for example, followed the efforts of rulers to liberalize markets (Ciezaldo and Badkhen 2001).

tend to be widely distributed and produce social welfare impacts that are negative in net. In this section, I examine the potential linkages between the level of consumer subsidies delivered and political regime type, aspects of electoral systems, and administrative capacity.

Overall, evidence supports predictions that democracies spend more on public services than non-democracies (Nelson 2007). A full theoretical account is given in Lake and Baum (2001), who argue that openness and contestation of political markets induce rulers to deliver benefits broadly. By lowering the costs of participating in the process for selecting rulers, and by enabling rivals to easily enter and exit the competition for office, democracy makes politicians accountable to broad constituencies and intensifies the pressure to perform well. This brings the level of public service provision close to the social optimum.

Findings are inconsistent, however, as to whether the greater level of public service spending by democracies actually translates into better human development outcomes. As Ross (2006) reasons, democracy does not necessarily make rulers responsive to groups in society that can most benefit from greater public services. Instead, public spending may be designed with the interests of more politically-powerful middle-income populations in mind. Additionally, as argued in Keefer and Khemani (2005) and Nelson (2007), incentives for reforms to improve the quality of public services may be weak because citizens may lack information about the technical details of such reforms, powerful vested interests may block their implementation, and politicians perceive that it is difficult to claim credit personally for improvements in the efficiency of public service delivery.

Additionally, the idea that rulers in authoritarian political systems face little pressure to deliver public services is oversimplified. The absence of elections does not mean that rulers can simply ignore mass society and rule only through repression. As argued in Gallagher and Hanson (2009), authoritarian rulers typically deal with pressures from below through some combination of carrots and sticks, both raising the

costs of protest against the regime and distributing resources to buy the acquiescence of citizens. Mares and Carnes (2009) show that there is significant variation the level and scope of social welfare policies within the category of non-democracies.

On the other hand, compared with non-democracies, democracies are more likely to produce the kind of political debate that may be necessary to reconcile competing perspectives over the allocation of resources. As demands are raised for devoting spending toward various needs in education, health, and so forth, budget constraints force choices between them. The debate and discussion that accompanies this process may help bring to light information that helps prioritize spending, leading to the reallocation of resources to some kinds of spending rather than others. Evidence from case studies of subsidy reform suggests that public information campaigns help facilitate subsidy reductions (Clements et al. 2013).

These conflicting perspectives regarding the effects of regime type on incentives for benefit provision make it possible to derive competing propositions when applying these insights to consumer subsidies. First, following the logic that open political contestation produces stronger accountability pressures that foster greater on a range of programs. Subsidies will thus increase along with spending on public health, education, and so forth.

**Hypothesis 1** *Democracies spend more on consumer subsidies than non-democracies.*

Alternatively, since consumer subsidies are an inefficient method of addressing public welfare needs, democracies will instead shift spending toward other forms of social spending. Political debate would help expose the costs of subsidy programs and citizens will be more likely to believe promises that savings from subsidy program reforms will be channeled into these more efficient uses. For non-democracies, use of consumer subsidies to provide for cheap food and energy is an administratively easy method to alleviate pressures against the regime.

**Hypothesis 2** *Democracies spend less on consumer subsidies than non-democracies.*



There is greater consistency in the literature when it comes to the relationship between electoral rules and the scope of goods provision. In most accounts, majoritarian political systems are expected to devote greater resources to goods that are targetable, either toward particular groups or geographic areas, while systems of proportional representation tend to supply greater resources towards policies that supply goods available more universally (Persson and Tabellini 1999; Milesi-Ferretti et al. 2002).

As goods, subsidies are not easily targetable to particular constituencies, especially when administrative capacity is low. Additionally, subsidies are not conducive to the kind of personal credit-claiming that may facilitate re-election in an environment where politicians are expected to deliver benefits to a particular geographical area. Policymakers in majoritarian systems would thus find consumer subsidies to be less attractive than other forms of good delivery. In proportional representation systems, by contrast, the incentives to run on party platforms that bring more widespread provision of benefits are stronger. We would thus expect spending on consumer subsidies to be greater in proportional representation systems than majoritarian systems.

**Hypothesis 3** *Consumer subsidies will be greater in democracies with proportional representation than those with majoritarian electoral rules.*

Higher levels of administrative capacity facilitate targeting of spending programs. Means-testing requires that bureaucracies can collect and maintain accurate information about household incomes and develop mechanisms to restrict subsidies to those determined eligible. Gómez-Lobo and Contreras (2003), for example, describe the greater accuracy of means-testing of water subsidies in Chile when compared with geographically-based application of water subsidies in Colombia. In the former case, a household member can apply for reduced pricing by completing a questionnaire at a local office. In the latter, dwellings are divided into categories and those living in particular dwellings received greater subsidies (though almost all households received some benefit). The Chilean system is more accurate but also more administratively complex.

Greater bureaucratic capacity can also lead to reduced spending on subsidies through a second mechanism: higher administrative capacity means that other forms of social welfare provision are more likely to be effective. Politicians can have greater confidence that their constituents will actually receive benefits allocated toward education and health programs when public service delivery agencies are more capable.

**Hypothesis 4** *States with higher-quality administrative bureaucracies will have lower spending on consumer subsidies.*

Finally, it is possible that the presence of more veto actors (i.e. checks) in the political system may have an effect on the level of consumer subsidies, but the direction of this effect is not clear. On the one hand, we can expect greater policy stability where the number of veto actors is greater (Tsebelis 1995). Efforts to cut subsidies are more likely to face roadblocks in this scenario. Additionally, veto actors can be points of access for special interests, which can lead policy in various directions depending on the preferences of these actors (Ehrlich 2011). One possibility is that veto actors use their position to ensure that a particular subsidy program is included in a logrolling effort.

On the other hand, depending on the status quo and preferences, veto actors could prevent the adoption of subsidies. Without data to develop conditional expectations based upon circumstances, it is difficult to have a clear expectation about the relationship between the number of veto actors and the level of consumer subsidies.

Overall, the propositions listed above represent an initial attempt to establish some basic findings. These propositions have the virtue of being testable with presently-available data. With development and refinement, a more fully-specified theory may yield a richer set of expectations.

### **3 Data and Methodology**

Cross-national data on consumer subsidies are relatively scarce due to the difficulty of measuring them. The many methods through which goods can be subsidized means

that subsidies do not necessarily appear in budgets. International datasets such as the IMF's *Government Finance Statistics* do not contain finely-grained information on subsidies.<sup>3</sup> Most work in this area involves case studies (Arze del Granado et al. 2012; Whitley and van der Burg 2015).

Relative to subsidies for food or water, subsidies for energy products have received more attention in recent years. The dramatic rise in energy costs in the early 2000's, and the growing concern about climate change, have increased attention on fuel and electricity subsidies. A group of researchers at the International Monetary Fund (Clements et al. 2013), have compiled a fairly comprehensive dataset of energy subsidy levels covering most of the world's countries in 2013 and 2015. An interesting feature of this data is that the researchers incorporated costs related to local pollution, traffic congestion, road damage, and the effects of global warming (p. 8). Yet, they argue that they underestimate the costs of subsidies because data are incomplete for some producer subsidies, consumer subsidies for natural gas, as well as other factors (p. 8-9).

Given the cross-sectional nature of the data, and the limited sample size, the multivariate analysis presented in this paper is Ordinary Least Squares with robust standard errors. The main dependent variable is the total level of subsidies in each country for oil, electricity, gas and coal, measured as a percentage of GDP (*EnergySubsidies*). The mean value of this variable for 2013 is 6.7 with a standard deviation of 8.6. Figure 1 shows the mean level of energy subsidies broken down by World Bank region.

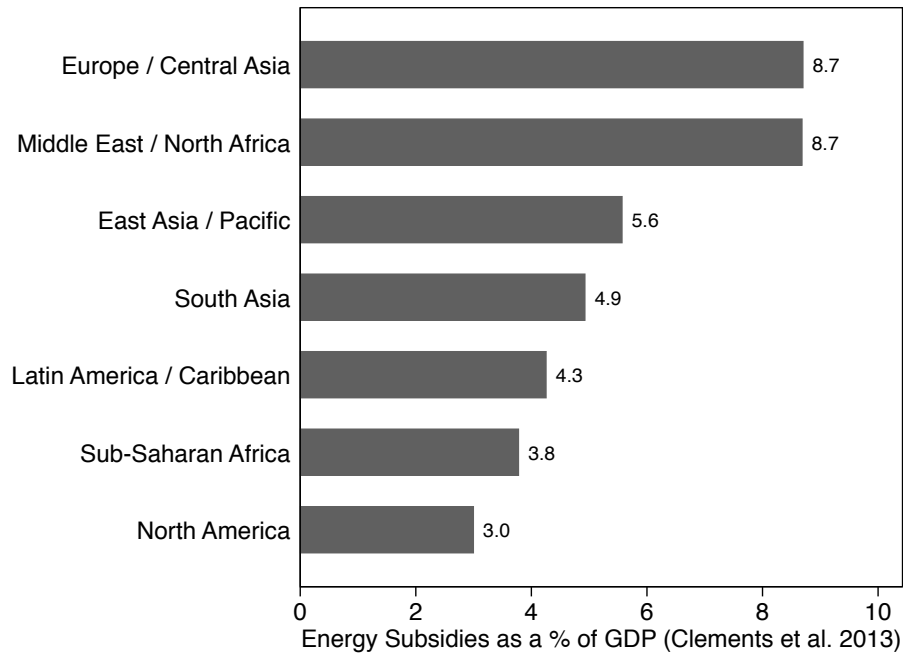
For purposes of comparison, some models use education spending as a percentage of GDP (*EducSpend*) or public health care expenditures as a percentage of GDP (*HealthSpend*). Both of these variables come from the *World Development Indicators* (World Bank 2016). These alternative models facilitate an assessment of whether expenditures on subsidies behave similarly to those for other public services.

Several different variables serve as measures of regime type, since most of these measures are problematic in one way or another. I use the *Polity* index on its original

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<sup>3</sup>Subsidies are categorized as subsidies to public corporations, subsidies to private corporations, and other subsidies.

**Figure 1: Energy Subsidies by Region**



20 point scale (Marshall and Jaggers 2007), the index of political rights (*PolRights*) from Freedom House (2016) rescaled to go from 0 to 6 with higher values meaning greater rights, the dichotomous measure of *Democracy* from Boix et al. (2013), and the size of the winning coalition (*W*) from Bueno de Mesquita et al. (2003).<sup>4</sup> In each case, I measure the country's mean value of the variable starting in 2003 and extending to the most recent year of coverage available.

The expectation is that all of these measures will produce the same substantive results despite the differences in their operationalization. In line with the argument in Gallagher and Hanson (2015), *W* is interpreted not as the size of the winning coalition but instead as a measure of the extent to which political competition is regularized in the form of competitive elections with turnover. Its operationalization more directly measures the latter.

To categorize the electoral system, I use the indicators for proportional representa-

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<sup>4</sup>The measure *W* has been updated by the author to cover more recent years.

tion (*PR*) and plurality rule (*Plurality*) from the *Database of Political Institutions* (Beck et al. 2001) as updated in 2012. Once again, I use the ten-year history of this variable to account for the fact that the level of subsidies in 2013 is the product of a longer political process. These variables equal the highest value of 1 when a country has had proportional representation or plurality rule system throughout the ten-year time period. Since some polities have a mixture of electoral rules, such as different rules in upper and lower houses, it is possible for a country to be coded as 1 on both indicators.

The level of administrative capacity (*BureauQual*) is the ten-year mean of the measure of bureaucratic quality from the risk analysis firm PRS Inc. (Howell 2001). The number of veto actors (*Checks*) is the logged number of the variable *checks* in the *Database of Political Institutions*.

Finally, all regression models control for the 2013 logged level of GDP per capita (*GDPcap*). This measure comes from the *World Development Indicators* and is measured in 2010 constant dollars.

## 4 Presentation of Results

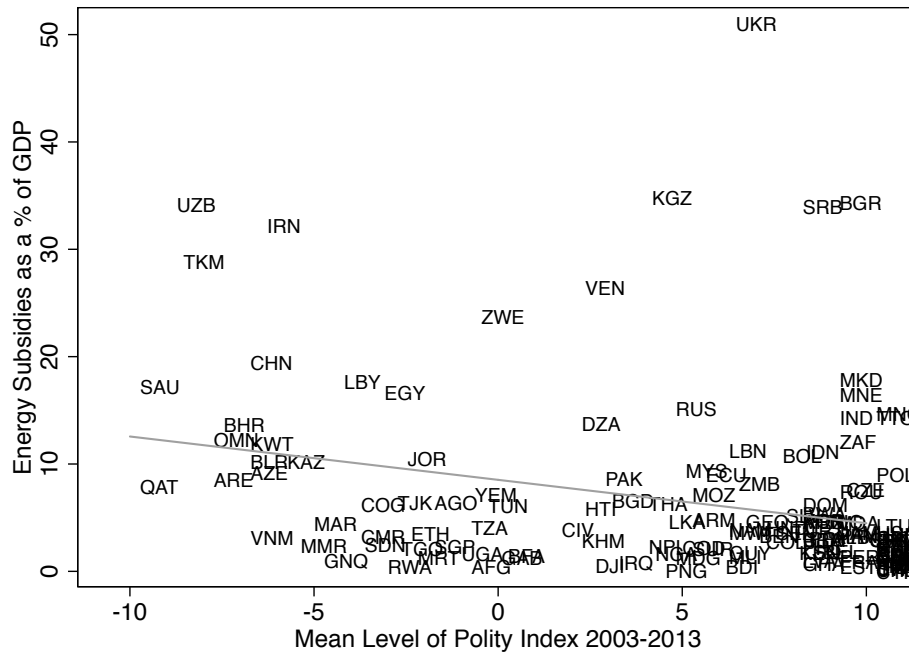
As Figure 2 illustrates, there is a weak, negative relationship between the total level of energy subsidies and regime type as measured by the Polity index. The Pearson's  $r$  correlation coefficient is  $-.28$  ( $p < .01$ ). The figure shows the presence of unusual values in some Eastern European and Central Asian countries.<sup>5</sup> Additionally, there is evident concentration of the data at high levels of the Polity index and low levels of subsidies. Overall, it appears that regimes that have the attributes of democracy measured in the Polity index tend to have lower levels of energy subsidies.

Table 1 presents four sets of regression results that test for the robustness of this general conclusion. Each model controls for log GDP per capita. The results are consistent and statistically significant. Despite the different operationalizations of the

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<sup>5</sup>This is in part related to transition from the Soviet-era energy infrastructure, which was oriented toward supplying a broader USSR industrial system that has not been easily governed at the national level post-breakup. The system needs extensive modernization that requires regional cooperation.

**Figure 2: Energy Subsidies and Polity Index**



four measures related to democracy, higher values of each variable are associated with lower levels of energy subsidies. This consistency lends credence to the claim that democracies subsidize energy at lower levels than non-democracies on average.

Substantively, each one-unit increase in the Polity index is associated with a decrease the predicted level of energy subsidies by .42 percentage points of GDP. The estimated difference in subsidies for countries at the lowest and highest values of the index is thus 8.4 percentage points of GDP. Similarly, a one-point increase in the Political Rights index is associated with a reduction of 1.54 percentage points in the predicted level of subsidies, which extends to 9.2 percentage points over the full range of the scale. Both of these are similar in magnitude to the -8.05 coefficient on *W*, which has a range of one unit. When using the dichotomous variable *Democracy*, the substantive magnitude is a bit less: democracies are predicted to have levels of subsidies that are about 3 percentage points of GDP lower on average than non-democracies.

The results in Table 1 can be compared with Tables 3 and 4 in the Appendix. In

**Table 1: Effects of Measures of Democracy on Subsidy Levels**

	(1)	(2)	(3)	(4)
Polity	-0.42** (0.12)			
PolRights		-1.54** (0.36)		
Democracy			-3.09^ (1.64)	
W				-8.05** (2.90)
GDPcap	0.01 (0.38)	0.46 (0.40)	-0.50 (0.44)	0.21 (0.45)
Constant	8.55* (3.49)	8.40* (3.37)	12.99** (4.03)	10.68** (3.64)
N	140	149	141	140
R <sup>2</sup>	0.09	0.11	0.05	0.05

Table 1. OLS model with robust standard errors. The dependent variable is the level of Energy Subsidies as a percentage of GDP

^  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

these sets of models, the dependent variables are EducSpend and HealthSpend respectively. With at least 95% confidence in all eight models, higher values on the four democracy measures are associated with greater spending on health and education. These findings are consistent with the idea that democratic contestation leads to a shift away from subsidies to other forms of social spending.

The models in Table 2 test the relationships between the level of energy subsidies and different measures of electoral systems, bureaucratic quality, and a measure of the number of veto actors. It is expected that levels of subsidies will be higher in electoral systems that use proportional representation, lower in systems that use plurality rule, and lower in countries where bureaucratic quality is higher. Expectations for Checks are unclear.

Models 1 and 2 are restricted to the subset of countries that are coded as 1 on the Democracy indicator from Boix et al., which is 86 countries. As the results indicate, the coefficients on the electoral system variables are both in the expected direction. Controlling for log GDP per capita, the mean level of energy subsidies was 2.9 percentage points of GDP higher in polities that utilized proportional representation during the ten-year period prior to 2013 compared to those that did not. This finding is significant at the .1 level. Correspondingly, in countries that employed the plurality rule during the previous ten-year period, the level of energy subsidies was about 2.3 percentage points lower on average, though the statistical precision of this result is not very high.<sup>6</sup>

Both of these results are consistent with hypothesized expectations drawn from the broader literature. Energy subsidies, like public goods, are conducive to broad distribution rather than narrow targeting. In the context of elections, they fit comfortably as part of a party platform. By comparison, individual candidates in majoritarian systems will be less able to take personal credit for such programs or deliver them in a targeted fashion to their constituency. Furthermore, the process of forming a coalition

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<sup>6</sup>As a reminder, since some countries have mixed electoral systems, these two measures are not mutually exclusive.



**Table 2: Effects of Institutions on Subsidy Levels**

	(1)	(2)	(3)	(4)
Polity			-0.28*	-0.39*
			(0.14)	(0.15)
PR	2.90 <sup>^</sup>			
	(1.62)			
Plurality		-2.32		
		(1.56)		
BureauQual			-2.08 <sup>^</sup>	
			(1.22)	
Checks				-1.52
				(2.29)
GDPcap	-1.68**	-1.67**	0.92	0.06
	(0.58)	(0.59)	(0.68)	(0.38)
Constant	18.07**	21.54**	4.29	9.66*
	(5.31)	(6.65)	(4.18)	(4.12)
N	86	86	122	138
R <sup>2</sup>	0.08	0.08	0.11	0.11

Table 2. OLS model with robust standard errors. The dependent variable is level of Energy Subsidies as a percentage of GDP

<sup>^</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

government may facilitate the kind of logrolling that makes enactment and protection of these subsidies viable.

Model 3 uses BureauQual is the key independent variable. As expected, we find that countries with higher levels of administrative capacity tend to have lower levels of energy subsidies ( $p < .1$ ). Since this variable has a 4-point scale, we would predict the level of subsidies to be about 8 percentage points of GDP higher in countries with very low bureaucratic quality compared to those with the highest ratings.

Although I do not test any particular mechanism directly, the evidence is consistent with two points outlined above. First, since means-testing of subsidies requires higher levels of administrative capacity, it may be that states become more frugal with subsidy policies administrative capacity increases. Second, forms of public service delivery that depend upon greater administrative capabilities may be more viable to policymakers as a means to deliver benefits when bureaucratic quality is higher. In other words, resources may be reallocated away from subsidies, and towards other forms of welfare provision, when these other forms become more feasible.

Finally, in Model 4, I test whether the presence of more veto actors in the political system, as measured by Checks, is systematically associated with the level of energy subsidies in any particular way. The answer is no. The negative coefficient of 1.52 is smaller than its standard error, so we have little confidence in making any particular claims about the role of veto actors.

## 5 Conclusion

In this paper, I seek to demonstrate that a focus on consumer subsidies as a form of goods delivery is a fruitful way to explore the relationship between institutions for selecting rulers and the nature of public spending. Since consumer subsidies share attributes with both public goods and private goods as they are stylized in much of the literature, they do not fit comfortably into these theories.

The empirical findings presented raise some points that merit further study. First, the fact that consumer subsidies appear to be greater on average in less democratic contexts provides is consistent with ample evidence from country case studies that dictators use consumer subsidies as a tool to win acquiescence of citizens. That these subsidies are delivered broadly, and not to some narrow coalition of elite insiders, contradicts the predictions set forth in Bueno de Mesquita et al. (2003).

Second, we also see a pattern in which resources appear to shift away from subsidies and toward health and education spending as democracy increases. The mechanism that drives this apparent shift is not clear. I speculate here that processes of democratic debate may help produce a more efficient allocation of resources in the face of budget constraints, but efforts to find evidence for this contention will be left for future work.

Third, the data presented in this paper pertain only to energy subsidies. To the extent that data can be gathered, we could be much more confident if similar findings were found with respect to subsidies for water and food. Given well-known cases of “bread riots” in many countries, as well as observations that recent unrest in the Middle East was associated with rising food prices, further research should attempt to locate broad data on food subsidies.

Fourth, data on citizens preferences for different priorities in public service delivery would be helpful when it comes to exploring whether consumer subsidies are a direct response to these preferences or whether administrative capacity conditions the extent to which politicians use subsidies as a second-best approach to benefit provision.

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# Appendix

**Table 3: Effects of Measures of Democracy on Education Spending**

	(1)	(2)	(3)	(4)
Polity	0.07* (0.03)			
PolRights		0.33** (0.09)		
Democracy			1.02* (0.42)	
W				1.77* (0.87)
GDPcap	0.03 (0.13)	-0.07 (0.13)	-0.06 (0.14)	-0.06 (0.15)
Constant	3.74** (1.04)	3.75** (0.99)	4.32** (1.14)	3.58** (1.03)
N	53	57	51	53
R <sup>2</sup>	0.08	0.15	0.12	0.07

Table 3. OLS model with robust standard errors. The dependent variable is the level of Energy Subsidies as a percentage of GDP

<sup>^</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$

**Table 4: Effects of Measures of Democracy on Health Spending**

	(1)	(2)	(3)	(4)
Polity	0.11** (0.03)			
PolRights		0.33** (0.08)		
Democracy			1.14** (0.32)	
W				2.45** (0.64)
GDPcap	0.74** (0.10)	0.61** (0.11)	0.72** (0.12)	0.65** (0.12)
Constant	-2.80** (0.80)	-2.45** (0.78)	-2.88** (0.91)	-3.15** (0.81)
N	158	173	159	157
R <sup>2</sup>	0.43	0.40	0.39	0.41

Table 4. OLS model with robust standard errors. The dependent variable is the level of Energy Subsidies as a percentage of GDP

<sup>^</sup>  $p < 0.10$ , \*  $p < 0.05$ , \*\*  $p < 0.01$