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Political determinants of electricity provision in small island developing states

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HIGHLIGHTS

- Effects of political institutions on household electricity consumption in SIDS.
- Electrification is seen as an example of public good provision.
- Democracy has a positive impact on electricity consumption when corruption is low.
- Electrification projects can gain from being sensitive to institutional context.

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ABSTRACT

This paper approaches provision of affordable and reliable electricity in Small Island Developing States (SIDS) as a case of public good provision. It aims to contribute to our understanding of how regime type and the quality of implementing institutions within political systems affect the prerequisites for successful electrification in SIDS. More specifically, we analyse the independent and interdependent effects of level of democracy and control of corruption on per capita household electricity consumption in SIDS, using data from 34 SIDS over the period 1996–2009. The results show that although the independent effects of level of democracy and control of corruption are sensitive to model specification, these two factors do have an interdependent impact on per capita household electricity consumption: democratization has positive effects on provision of electricity to the general population only when there is a certain level of corruption control in place. The results imply a) that it is important for policy actors to acknowledge the interaction between regime type and the quality of implementing institutions, and b) when planning electrification projects in SIDS, it is necessary to have information about the social and political context in order to design the most effective projects.

1. Introduction

In line with the UN Sustainable Development Goal 'ensure access to affordable, reliable, sustainable and modern energy for *all*' (United Nations, 2015b [italics added]), this paper approaches provision of affordable and reliable electricity in Small Island Developing States (SIDS) as a case of public good provision. By this, we mean that the benefits of providing access to affordable electricity are non-excludable and 'non-rivalrous' (e.g. street lights, reliability) indicating a limited incentive for individuals or the private sector to contribute to their production (e.g. Abbott, 2001). The building of large-scale transmission and distribution infrastructure is hugely expensive and a long-term investment, thus typically of little interest to commercial investors. Hence, the undertaking of electrifying an entire population is primarily politically driven (Baskaran et al., 2015), posing high demands on both the political and administrative systems (Ahlborg et al., 2015).

One of the central debates in research on the drivers behind public good provision concerns what kinds of governments–democratic or autocratic–most effectively provide public goods, such as basic infrastructure and social services. Clearly, democratic institutions–through which the leaders of a country are held accountable to the citizens–create a strong incentive among leaders to deliver generally demanded public goods, including affordable electricity (Acemoglu and Robinson, 2006; Schmitter and Karl, 1991). Because elections provide citizens with the power to replace leaders that do not fulfil these expectations, and because public good provision is likely to be included in the evaluation of political leaders, democracy can be expected to lead to more public good provision, such as affordable and reliable electricity in SIDS

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countries (Bueno de Mesquita et al., 2003; Deacon, 2009; Gandhi and Przeworski, 2006; Lake and Baum, 2001; McGuire and Olson, 1996).

In parallel, however, a growing literature questions the significance of these parameters (such as free and democratic elections), instead arguing that successful provision of public goods is determined by the quality of a number of other parameters, i.e. the institutions responsible for *implementing* public good policies. One common argument is that elected leaders often work with short time horizons (Haggard, 1991; Keefer, 2006) whereas public good provision–not least in the form of investments in electric power infrastructure–is a long-term undertaking (Min, 2008, 2015). Furthermore, the focus on accountability and incentive structures for political leaders tends to overlook situations where political leaders have strong incentives to provide public goods (e.g. because they want to be re-elected) but lack the *capacity* to deliver them, typically due to a poorly functioning central bureaucracy (Ahlborg et al., 2015). One key factor that has been shown to affect public service provision is the presence or absence of corruption, conventionally defined as the exercise of public power for private gain (Gupta et al., 2000; Holmberg et al., 2009; Mauro, 1998; Nye, 1967).

In this paper, we study both the independent and the interdependent effects of democracy and corruption on the provision of electricity to households.

When studying the impact of democracy and corruption on public good provision, studying SIDS is of particular interest. It is commonly argued that public good provision has increasing returns to scale, which, in the case of small islands, means that they risk suffering from higher per capita costs for such public goods. In addition, countries in this group are vulnerable to natural disasters and particularly dependent on external support and/or international trade, which makes the provision of electricity and other public goods especially challenging.

Based upon this short background, the aim of the paper is twofold. First, we briefly assess how successful small island developing states are when it comes to public good provision in the form of affordable and reliable electricity. Second, and primarily, we examine the effect of the level of democracy and control of corruption in the public administration on successful provision of electricity in SIDS. As we argue below, there are strong reasons to expect that these factors can reinforce each other's effect on public good provision. Therefore, we study both their independent and interdependent effects.

This paper thus contributes to the energy policy literature in several ways. First, it offers a comparative analysis of provision of electricity to the general public in SIDS. Second, and most importantly, it contributes to our understanding of how regime type and the quality of implementing institutions within political systems affect the prerequisites for successful electrification in SIDS. Furthermore, to understand better how these institutional features are related to provision of electricity in the SIDS's context is of utmost importance for policy, because to design the most effective projects, it is crucial to know the challenges of the specific context. Policies aimed at fulfilling the general demand for electricity most likely need to be rather differently designed depending on the political and institutional contexts. For example in contexts lacking a democratic tradition, or contexts suffering from severe corruption, electrification projects are likely to need a strong focus on the institution building to be successful (Ahlborg, 2015). Previous research also shows that policy instruments have to be sensitive to the political institutional context to be seen as legitimate (Harring, 2014, 2015).

The rest of the paper is organized in the following way. First, we briefly discuss previous research on SIDS and public good provision. In this section, we also account for previous research on how regime type and the quality of implementing institutions impact public good provision. Building on these lines of research, we present our argument and hypotheses. Thereafter, we account for our methodological approach, describing the data we use and the statistical techniques we apply. A section where we present and discuss our results then follows. The paper ends with a discussion of policy implications and some concluding remarks.

2. Background and literature review–hypothesising successful electrification

2.1. SIDS and the need for electricity

SIDS is a rather diverse group of slightly more than 50 countries. To call them SIDS is not all that straightforward. First of all, not all SIDS are small: their populations vary from six thousand people in Nauru to 11.5 million in Cuba, while land area varies from Tuvalu's 30 square km to 452,860 square km in Papua New Guinea. Second, not all of them are islands, as some are located on a continent, such as Guinea-Bissau, Guyana or Suriname. Third, not all of the SIDS are developing countries. For example, GDP per capita in Singapore reaches 50,000 USD per capita, while in Trinidad and Tobago, Bahamas, Seychelles and Barbados, per capita income exceeds 30,000 dollars, which is comparable to the levels of France and Japan. Finally, not all SIDS are independent nation states. Fourteen of them are territories under foreign jurisdiction, for example American Samoa (the US), Aruba (the Netherlands) and French Polynesia (France). However, what clearly unites these countries and territories is that they all have vulnerable environments and to some degree face similar challenges of limited resources and excessive dependence on foreign trade. We delimit our study to only independent states and governments as they are responsible for taking care of the countries' territories and are fully accountable for their social and economic outcomes.

A focus on SIDS is particularly interesting for the study of public good provision because a rather large literature argues that island states suffer from their smallness and isolation. For example scholars have asserted that public good provision is typically characterized by increasing returns to scale and, hence, that small states suffer from higher per capita costs of such goods (Alesina and Spoalare, 1997; Easterly and Kraay, 2000; Harden, 1985; Kuznets, 1960). Small states may also face disadvantages in terms of diversifying their production, having a limited labour force and facing difficulties in recruiting high-quality candidates (Armstrong and Read, 1998; Briguglio, 1995). In addition, they are vulnerable to and thought to suffer from their remoteness, having high transportation costs, small internal markets and a high degree of vulnerability to economic shocks and natural disasters (Srinivasan, 1986).

This vulnerability is also manifested in regard to electricity provision, which is currently mainly based upon fossil fuels (Dornan et al., 2015). The economies of many SIDS are energy intensive, i.e. the countries consume a large amount of energy for every dollar of income that they generate (Dornan, 2015). Furthermore, due to their distance from major markets, combined with the absence of scale economies, many SIDS are dependent upon long way transportations (Winters et. al. 2004). In addition, a large amount of the unreliable fossil fuel based energy is used for activities that presuppose durable and stable electricity provision, such as for industry and tourism, refrigeration, lighting, and household appliances including air conditioning (World Bank, 2014; Dornan, 2015).

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