ELSEVIER
www.elsevier.com/locate/worlddev

CrossMark

World Development Vol. 93, pp. 16–30, 2017

http://dx.doi.org/10.1016/j.worlddev.2016.11.019

Money Flows, Water Trickles: Understanding Patterns of Decentralized Water Provision in Tanzania

RUTH D. CARLITZ*
University of Gothenburg, Sweden

Summary. — Over the past three decades, an increasing number of low- and middle-income countries have decentralized water provision to the local government level, and have sought to more thoroughly involve users in service delivery. Such reforms reflect the twin goals of encouraging greater responsiveness to local needs and promoting sustainability. This study illustrates how the aims of decentralization can be undermined in the absence of robust democratic competition, and how governments interpret "demand" by voters in such settings. Focusing on the Tanzanian water sector, the paper first traces the distribution of money for water from the central government to the district level. Next, I consider how district governments use these funds to distribute water infrastructure within their jurisdictions, using geo-referenced data on all 75,000 water points serving rural Tanzanians. I find that the central government's allocation of money to districts is fairly unresponsive to local needs. However, the pattern of distribution cannot primarily be explained by politics, with the exception of consistent favoritism of the Minister for Water's home district. Political favoritism is more pronounced at the local level. Within districts, the distribution of new water infrastructure is skewed to favor localities with higher demonstrated levels of support for the ruling party. In addition, wealthier and better-connected communities—those with the resources to more effectively express their demands—are significantly more likely to benefit from new construction. This suggests that "demand-responsive" approaches to water provision can entrench regressive patterns of distribution.

Key words — rural water provision, decentralization, Africa, Tanzania

1. INTRODUCTION

Since the 1980s, at least 41 countries have decentralized water and sanitation services to subnational governments (Herrera & Post, 2014). Such reforms have typically included provisions requiring water users to demand, own, and maintain their water services and participate in their design (Lockwood & Smits, 2011). Decentralized water provision aims to engender greater responsiveness to local needs. In general, bringing government closer to the governed should facilitate the identification and targeting of needy populations (Crook, 2003; Galasso & Ravallion, 2005), and make it easier for citizens to sanction or reward poor or good behavior on the part of local officials (Faguet, 2012). Moreover, having water users make informed choices about their preferred service level is expected to promote sustainability, by encouraging users to contribute to the upkeep of water infrastructure (Koehler, Thomson, & Hope, 2015).

However, decentralization has frequently failed to live up to its promise (Conyers, 2007; Crook, 2003; Olowu, 2003; Slater, 1989). In particular, decentralization can falter in countries where local democracy does not function properly (Bardhan & Mookherjee, 2006). Specifically, in dominant party regimes—where multiparty elections are held but usually do not allow for the alternation of political power (Magaloni & Kricheli, 2010)—incumbent politicians have used decentralization reforms to consolidate their power (Green, 2011; Riedl & Dickovick, 2014).

This study provides an empirical illustration of the dynamics of service delivery in the dominant party regime context. I do not aim to distinguish the effect of decentralization *per se*, given a lack of data on relevant outcomes from the pre-reform period. Rather, the paper illustrates how the aims of decentralization can be undermined in a dominant party regime, and how governments interpret "demand" by voters in such settings.

Focusing on the Tanzanian water sector, I first trace the distribution of money for water from the central government to the country's local government authorities (LGAs). Next, I consider how LGAs use these funds to distribute water infrastructure within their jurisdictions, using detailed, geo-referenced data from a water point[1] mapping exercise conducted during 2011–13. I find that the central government's allocation of money to LGAs is fairly unresponsive to local needs. However, the pattern of distribution cannot be primarily explained by politics, with the exception of consistent favoritism of the Minister for Water's home district. Political favoritism is more pronounced at the local level. Within LGAs, the distribution of new water infrastructure is skewed to favor localities with higher demonstrated levels of support for the ruling party. In addition, wealthier and better-connected communities—those with the resources to more effectively express their demands—are significantly more likely to benefit from new construction.

This study's main contribution is empirical—serving to test theories that have dominated the decentralization and distribution politics literatures with finely grained, geo-referenced data on public goods provision. While the literature on distributive politics in developing countries has been expanding (Golden & Min, 2013; Stokes, Dunning, Nazareno, & Brusco, 2013) studies that incorporate such detailed data are still rare.[2] The granular data I use allow me to consider service delivery at a very localized level. Unlike studies that rely on blunter measures, I am able to distinguish between local capture and politicized misallocation by local governments.

Furthermore, this study considers the allocation of resources both *to* and *within* districts, allowing one to compare the logic of distribution by Tanzania's central and local governments. Bardhan and Mookherjee (2006) note that there is

* Final revision accepted: November 8, 2016.

fairly little evidence concerning the relative accountability of local and national governments. The finding that targeting tends to be regressive at lower levels of government contrasts with much of the extant research on pro-poor targeting in low-income countries. Table 1 shows that most recent studies have found more pro-poor targeting at the local level than by central governments. The extent to which differences in the quality of targeting reflect differences in regime type represents a fruitful path of future inquiry.

This paper's focus on rural areas also represents an important contribution to the literature on strategies for promoting sustainable water provision. Recent studies have focused on the urban water sector (Herrera & Post, 2014; Marson & Savin, 2015). However, the vast majority of people who do not have access to improved drinking water sources live in rural areas. As of 2015, 79% of the people using unimproved sources and 93% of people using surface water were rural residents (UNICEF & World Health Organization, 2015). In addition, despite rapid urbanization over the past half century, most countries in Africa remain predominantly rural. This enhances the generalizability of my findings.[3] Furthermore, the focus on water provision makes the analysis relevant to the literature on political ecology, in seeking to politicize our understanding of the distribution of water (Loftus, 2009).

This study also sheds light on the broader question of how dominant party regimes stay in power. This is an important contribution given that such polities represent the most common type of authoritarian rule in the post-World War II period.[4] Empirical work on this topic has primarily focused on how national-level elections and legislatures serve to bolster dominant party regimes. Less well understood is how the dynamics of dominant party rule play out at the local level.

This paper proceeds as follows. The next section provides relevant background information on decentralization as a strategy for improving rural water provision. Section 3 highlights relevant features of the Tanzanian context. Section 4 presents empirical analysis of central government allocations, while Section 5 analyzes infrastructure distribution by local governments. Section 6 discusses the results in light of the extant literature, and Section 7 concludes.

2. DECENTRALIZATION OF WATER PROVISION: PROMISE AND REALITY

Improved access to clean water benefits not only those who drink, bathe, and wash their dishes in it; clean water can also help to limit the spread of disease and contribute to environmental protection. Positive externalities such as these have motivated government intervention in the water sector so that the benefits of improved access may be more widely enjoyed. Furthermore, water distribution represents a natural monopoly, limiting the scope for competitive pressures. The sector is also characterized by a high degree of sunk costs (van Ginneken, Netterstrom, & Bennett, 2011). These factors and others encouraged the centralized, supply-driven approach that characterized the water sector for decades in many low- and middle-income countries in the post-World War II era.

By the late 1980s, however, financial crises and rapid population growth meant that many governments lacked the resources to provide and maintain sufficient infrastructure for water provision. Fragmented planning, inefficiency, and lack of cost recovery further exacerbated the situation (Prasad, 2007; World Bank, 1994). Awareness of these

Table 1. *Studies of central vs. local targeting of the poor*

Author(s)	Focus of Study	Findings	More pro-poor targeting at lower levels?
Alderman (2002, 2002)	Social assistance program in Albania	Local authorities better allocate social assistance among households than does central government among local authorities.	Yes
Baird *et al.* (2013)	Community-driven development program in Tanzania	Strongly regressive pattern of demand across districts. However, progressive funding formula, eligibility rule, and decentralized beneficiary selection combine to result in mildly pro-poor targeting within districts.	Yes
Bardhan and Mookherjee (2006)	Local government development programs in West Bengal	Inter-village allocations exhibit anti-poor bias while intra-village targeting favors the poor.	Yes
Chase (2002)	Social fund in Armenia	Social fund was successful in targeting communities with poorest infrastructure, but these communities were not always among the poorest and fund was slightly regressive in targeting households in rural areas.	No
Galasso and Ravallion (2005)	Food-for-education program in Bangladesh	Capture within community less severe than distorted inter-community allocations decided by higher-level governments.	Yes
Paxson and Schady (2002)	Social fund in Peru	The social fund, which emphasized geographic targeting, reached poorest districts but not poorest households in those districts.	No

challenges led the international development community to a new way of thinking about government intervention in the water sector. This understanding is most clearly reflected in the Dublin Principles, which were advanced at the International Conference on Water and the Environment in Dublin, Ireland in 1992 (Savenije & van der Zaag, 2002). Of particular importance are the "Institutional Principle," which calls for participatory water management, including the devolution of responsibility "to the lowest appropriate level," and the "Instrument Principle," which holds that water should be managed as an economic resource (de Azevedo & Baltar, 2005, p. 19). As a result, foreign aid donors began to encourage decentralization of water in recipient countries, often making it a condition for receiving sectoral assistance. Compared to other sectors, the construction of water point infrastructure was seen as particularly amenable to decentralization given its low levels of "externability" (geographic spillovers), high levels of "chargeability" (ease with which it could be financed by charges as opposed to taxes), and relatively low levels of "technicity" (required technical and managerial expertise) (Prud'homme, 1995). Decentralization was understood as a means of increasing user influence upon policymaking, which would in turn increase political support for raising needed revenue from users in order to improve service provision (Herrera & Post, 2014, p. 621).

The decentralization of water provision has taken three main forms: private sector participation, delegation, and devolution. Devolution in this context further entails two processes meant to reinforce each other: (i) devolution to local governments, and (ii) devolution to community-based groups (Mclean, 2002). The second process reflects the so-called "demand-responsive approach" (DRA), which has emerged as the leading paradigm for rural water supply in recent decades (Koehler *et al.*, 2015). In practical terms, demand for water tends to be understood as the willingness to pay for access (Rout, 2014). In a number of countries, this translates into mandatory cost-sharing—with the government's water policy requiring that a community must contribute a given percentage of the total project cost before construction can begin (Marks & Davis, 2012; Moe & Rheingans, 2006).

Existing empirical evidence suggests that it can be difficult for decentralized water provision to meet its stated goals of improving cost recovery, sustainability, and access to services. In general, devolution can fail if local decisions are not fully democratic, if the costs of local decisions are not fully borne by decision makers, and if benefits "spill over" jurisdictional boundaries (Bird, 1994). Synthesizing case studies that provide detailed data on service delivery in Africa, Conyers (2007) finds that the potential benefits of decentralization are often undermined by: inadequate devolution of power, particularly over finance and staff, vague and/or inappropriate systems and procedures, under-qualified and unmotivated staff, political interference and corruption, and a lack of "downward" accountability (of local politicians to their constituents). Looking at the urban water sector, Herrera and Post (2014) find that decentralization has not increased support for cost-recovery policies as promised, given local political opposition to such measures. In addition, Koehler *et al.* (2015) note that operations and maintenance of rural water infrastructure have barely improved despite widespread adoption of DRA principles. In practice, the approach is often thwarted given a lack of acceptability, feasibility, or limited capacity of communities to sustain their chosen option.

3. THE TANZANIAN CONTEXT

As in many low- and middle-income countries, Tanzania's experience with decentralized water provision reflects broader efforts to devolve responsibility for public service delivery to lower levels of government. Water provision in Tanzania also reflects key features of Tanzanian politics.

(a) *Politics of Tanzania*

Tanzania, like many other countries in sub-Saharan Africa, is neither fully democratic nor completely authoritarian. Largely in response to external pressures, the Government of Tanzania legalized multi-partyism in 1992. Since then, elections have been held regularly and are increasingly viewed to be free and fair, with candidates at all levels of government respecting term limits and transferring power peacefully. However, the ruling Chama cha Mapinduzi (CCM) party has retained the firm grip on power it has held since Tanzania achieved independence in 1961.[5] Although a coalition of opposition parties made considerable inroads in the 2015 election, the CCM candidate for President won with a comfortable margin of nearly 20 percentage points, and the ruling party maintained its legislative supermajority with 68.66% of seats in Parliament (Roop & Weghorst, 2016).

Opposition parties in Tanzania have remained weak, primarily due to efforts by the ruling party to impede potential competitors. Biases in the electoral formula give CCM more than its proportional share of seats in Parliament (Hoffman & Robinson, 2009). Furthermore, the country's National Electoral Commission lacks independence, campaign finance rules overwhelmingly favor the CCM, and onerous party registration procedures create barriers to entry for would-be challengers.

This paper highlights the role of local politicians in sustaining CCM dominance, in particular the motivation and ability of Tanzania's ward councillors to target regime supporters with public goods and services. Each of Tanzania's local government authorities (LGAs) is governed by a district council, made up of councillors elected from the district's 20–40 wards.[6] Ward councillor elections are held concurrently with Parliamentary and Presidential contests every five years, with candidates running in single-member constituencies. CCM dominance is typically even more apparent at the local level than in national contests. In 2005, ruling party candidates won 2,155 out of 2,335 local elections in 2005, and in 2010 they dominated 2,204 out of 2,736 such contests.[7]

(b) *Tanzania's experience with decentralization*

In 1996, with considerable financial support and pressure from its foreign donors, Tanzania began implementing a series of reforms intended to promote "decentralization-by-devolution" (Green, 2003). The government then introduced a formula-based system of intergovernmental grants in 2004. These reforms were motivated by the desire (of both the Tanzanian government and its many donors) to make the distribution of resources among local governments more objective, transparent, efficient, and equitable (Boex & Martinez-Vazquez, 2006), and ultimately to improve service delivery (Pallotti, 2008).

In the wake of these reforms, Tanzania's 169 local government authorities (LGAs, also known as districts) are responsible for over 25% of public spending. However, transfers from the central government typically account for around 90% of all

local revenues. This constrains LGA autonomy, leading to what some have termed "recentralization" (Kessy & McCourt, 2010). The central government also continues to influence local and regional structures, with centrally appointed officials serving beside their locally elected counterparts at levels as low as the village.

(c) *Decentralized water provision in Tanzania*

Water has been high on the stated agenda of Tanzania's ruling party since shortly after independence. In 1965, the government took full responsibility for the funding of rural water supplies, and declared that water at public distribution points (standpipes, boreholes, etc.) should be free (Jiménez & Pérez-Foguet, 2010). At the end of 1970, the ruling party created an ambitious plan which stated that by 1991 the entire population (both rural and urban) should have access to safe water within easy reach of their homes (Giné & Pérez-Foguet, 2008). However, economic crises throughout the 1970s and 1980s led to major declines in service delivery. By 1985, only 46% of the country's rural population had access to clean water (Bayliss, 2008). Foreign donors started developing water supply programs, largely bypassing government structures and ultimately proving to be unsustainable. In response, the Government of Tanzania launched a new national water policy in 1991, broadly in keeping with the new economic orthodoxy dominating other aspects of policymaking in the country. The National Water Policy was revised in 2002, introducing elements of devolution, commercialization and corporatization, such as public–private partnerships and measures to promote cost recovery (Ministry of Water, 2006a).

In order to implement the revised policy, a coalition of civil society organizations and donors [8] worked with the Government of Tanzania to establish the Water Sector Development Program (WSDP). The WSDP, spurred by the Millennium Development Goal to increase access to clean water, was intended to enhance coordination among donors as well as across three sub-sectors (rural water supply, urban water supply and sewerage, and water resources management) under one comprehensive investment and regulatory regime (Ministry of Water, 2006a). Along with increasing access to clean water, the WSDP also aims to promote decentralization and encourage public participation.

Under the WSDP, the central government is supposed to allocate resources for water provision (primarily funds for the construction of new water infrastructure) according to a formula that takes into account need (proportion of population that lacks access to clean water) and ease of extraction. [9] According to more recent descriptions of the allocation formulas for water and other sector block grants, districts must also satisfy a set of minimum conditions related to financial management, planning and budgeting, procurement, and other functional processes in order to receive their full grant amounts (United Republic of Tanzania, 2011). LGAs are then supposed to allocate water funds to projects in specific rural communities within the district, in accordance with both local need (as reflected by current levels of access) and demand (as demonstrated through a bottom-up planning process). The subsequent two sections look at how this process plays out in reality.

4. CENTRAL GOVERNMENT ALLOCATIONS

Decentralizing service provision creates two primary opportunities for political interference: (i) politicized misallocation of funds to districts by the central government, and (ii) politicized misallocation of resources by local governments. This section outlines expectations about the central government, which are then tested using data on actual budget disbursements for water provision to districts over a period of seven years. The subsequent section considers the dynamics of distribution at the local government level.

(a) *Hypotheses (central government allocations)*

In dominant party regimes, central government politicians often use elections in the context of decentralization to manipulate local officials by threatening to withdraw resources unless localities demonstrate high levels of support for the regime (Weingast, 2014). This behavior stems from the fact that dominant parties do not just want to win elections, they want to win by large margins. Obtaining "supermajorities" allows such parties to maintain control over national electoral institutions and project an "image of invincibility" (Magaloni, 2006). Diaz-Cayeros, Estevez, and Magaloni (2012) explain that in settings characterized by limited political competition, "voters... are forced to support the incumbent party even when it fails to deliver any collective benefits, because they are likely to be punished and removed from the government's spoils system if they defect to the opposition" (p. 235). The poorer the median voter, the more effective the punishment regime in deterring mass and elite defections and the less need for electoral fraud (Magaloni, 2006).

Evidence of resources being allocated in a way that disproportionately favors supporters of the dominant party, while punishing those that defect to the opposition has been documented by, among others, Magaloni (2006) in Mexico, Blaydes (2011) in Egypt, and Weinstein (2011) in Tanzania. This suggests the following:

> *Punishment/Favoritism Hypothesis (Districts):* Money for water will be disproportionately channeled to districts that support the ruling CCM party with a high margin of victory, and will be reduced when the CCM's margin falls.

I also consider whether the Minister for Water's home district is favored when it comes to the allocation of finance for water provision. This reflects the widespread tendency of government officials in Africa to use their offices for personal gain, as well as to benefit their reference or support groups (Joseph, 2014). In the Kenyan context, Kramon and Posner (2016) find that coethnics of the minister of education acquire more schooling than children from other ethnic groups. Similarly, Burgess *et al.* (2015) find that Kenyan districts that share the ethnicity of the president benefit disproportionately when it comes to new road construction. Empirical evidence of hometown favoritism with respect to infrastructure provision has also been found in a broader sample of African countries (Öhler & Nunnenkamp, 2014).

> *Hometown Favoritism Hypothesis (Districts):* Money for water will be disproportionately channeled to the Minister for Water's home district.

(b) *Empirical strategy (allocation of funds to districts)*

In order to better understand the logic of central government distribution, I estimate a series of regressions based on the following model:

$$\begin{aligned} log(Allocation)_{it} = {} & \alpha_{it} + \beta_1 Unserved_{it-1} + \beta_2 GravityDom_{it-1} \\ & + \beta_3 AuditOpinion_{it-1} + \beta_4 CCM_{it} \\ & + \beta_5 MinHome_{it} + \beta_6 log(Allocation)_{it-1} \\ & + \beta_7 X_i \end{aligned}$$

The dependent variable, $log(Allocation)_{it}$, is the actual allocation of funds for water (logged) to district i in year t. The first three regressors reflect the formula that the central government is supposed to follow. $Unserved_{it-1}$ is the proportion of the population that was unserved (did not have access to an improved water source) in district i in the year preceding the allocation of resources. $GravityDom_{it-1}$ is a dummy variable indicating whether gravity schemes were the dominant extraction technology in district i in $t-1$. (The capital costs associated with gravity schemes are relatively high, as compared to other common extractive technologies such as shallow wells and boreholes. This variable also serves as a proxy for difficulty of extraction.) $AuditOpinion_{it-1}$ is the auditor's opinion of the district's accounts in the previous year, a proxy for the quality of financial management.

The subsequent variables correspond to the hypotheses outlined above. CCM_{it} is support for the ruling party measured in various ways as I describe below. $MinHome_{it}$ is a dummy variable indicating the Water Minister's home district. I also control for a one-year lag of the dependent variable to account for possible path dependence. X_i is a vector of time-invariant controls such as poverty and depth-to-groundwater. Finally, I also estimate a series of regressions that include year fixed effects to account for broad temporal trends.

The main specification I consider is a pooled linear regression model, since most of the regressors vary more across than within districts over the seven-year period I study. Standard errors are clustered by district.

(c) *District-level data*

Data on actual disbursements to rural districts for water projects for each year from 2007 to 2013 comes from the Ministry of Water's Management Information System. [10]

I operationalize the formula criteria variables as follows. [11] To calculate $Unserved_{it-1}$ (the percent unserved in each district), I compare the stock of water points with the population in each year, assuming that each water point serves 250 people (per the Ministry of Water's guidelines). My data on water point stock are derived from a recent water point mapping (WPM) exercise led by the World Bank and the Tanzanian Ministry of Water. [12] The WPM dataset includes observations of 75,000 public water points serving rural communities in mainland Tanzania, with information on their year of construction, source type, management scheme, functionality status and precise geographical location. This information allows me to construct a time series, using Geographic Information Systems (GIS) software to map the water points into districts. The WPM data also facilitate the calculation of $GravityDom_{it-1}$.

As a proxy for the quality of financial management, I consider the auditor's opinion of the district's accounts in the year preceding disbursement. The audit reports take into account much of the same criteria as the annual assessments of financial management, which are not publicly available for all years that I study. Each year, the National Audit Office (NAO) of Tanzania subjects each district to an audit and then issues an overall opinion, which can be of three main types: "Unqualified" (clean), "Qualified" (when there are material misstatements in districts' financial record-keeping), or "Adverse" (when the district's financial statements are not in accordance with the applicable financial reporting framework or accounting standards). In each year, I code $AuditOpinion_{it-1}$ on a 3-point scale such that higher scores correspond to better financial management (Adverse = 1, Qualified = 2, Unqualified = 3). [13]

The political variables are operationalized as follows: I measure regime support using both the vote margin (percent) for the CCM Parliamentary candidate (equal to the difference between the vote share for the CCM candidate and the runner-up) and the CCM Presidential candidate's vote share in the most recent election. (There were two elections during the study period: 2005 and 2010). In order to test for the presence of a punishment regime, I construct a dummy variable indicating whether the CCM lost dominance of the district (i.e. the district went from being represented only by CCM MPs to either CCM and opposition MPs or opposition MPs only in the last election). [14]

I also construct a dummy variable for the Minister of Water's home district, which changed three times during the study period. [15]

Deviations from the formula may also be explained by district-level poverty, which I therefore include as a time-invariant control. [16] I measure poverty using estimates from the WorldPop high resolution poverty maps. The WorldPop poverty maps illustrate the proportion of people living in poverty (defined as less than $1.25 per day) per square kilometer in 2010. [17]

In addition, I control for population (logged), district area (logged), and depth to groundwater as a proxy for how difficult it is to extract water from a given district. My data on depth to groundwater are from MacDonald, Bonsor, Dochartaigh, and Taylor's (2012) quantitative maps of groundwater resources for Africa.

Table 2 describes data sources and construction of district-level variables. Note that during 2006–13, Tanzania added over 30 districts—in keeping with a trend common to sub-Saharan Africa, where almost half of all countries have increased their number of administrative units by at least 20% since 1990, following decentralization reforms (Grossman & Lewis, 2014). Given that Tanzania's land mass has not expanded, all of the new districts have been carved out of existing districts. A failure to match new districts with their "parents" can lead to incorrect inferences about changes in public service delivery within districts over time. Though I have not been able to obtain any official record denoting the timing and process of district creation, I have been able to determine the "parent" wards of all newly created districts by comparing election results for 2005 and 2010, comparing shape files from the 2002 and 2012 Census, and conducting additional Internet searches where necessary. In order to analyze changes over time since beginning of WSDP, I collapse all new rural districts in with their "parents".

Table 3 depicts summary statistics for the district-level variables.

(d) *Results: financial allocations to districts*

The results from the regression analyses suggest that financial allocations to districts for water provision are not very responsive to district-level needs. However, I do not find much evidence suggesting political interference. Table 4 depicts the correlates of financial allocations for water provision to rural districts. Model 1 includes only the formula criteria as regressors. We see that neither the proportion of the population that lacks access to clean water nor the dominant extraction technology are significantly correlated with allocations, though districts with more favorable ratings from the audit agency receive more money for water on average.

Models 2–4 then add in the political variables, a one-year lag of the dependent variable, and dummies for each year. We observe evidence of hometown favoritism, with the

Table 2. *District-level variables: data sources and construction*

Variable	Source	Method of construction	Years available
Actual Allocation (Millions of TZS)	Ministry of Water's Management Information System (MIS) www.mowimis.go.tz	Download actual allocations for each year from MIS website.	2006–13
CCM MP Margin	National Electoral Commission (www.nec.go.tz)	Subtract largest vote share for non-CCM candidate from CCM candidate's vote share.	2005; 2010
Minister for Water's home district	Web searches for biographical information on Ministers of Water.	See Appendix.	2006–13
Audit Opinion	National Audit Office	Use audit reports to code annual opinion on 3-point scale such that higher scores correspond to better financial management (Adverse = 1, Qualified = 2, Unqualified = 3).	2006–13
Poverty Rate	WorldPop (worldpop.org.uk)	Overlay district boundaries on WorldPop poverty map of Tanzania to generate district-level estimates of the proportion of people living on less than $1.25 per day.	2010
Population (thousands)	2002 and 2012 Census (www.nbs.go.tz)	Assume constant growth rates within districts to estimate population in years intervening between Censuses.	2006–13
Area (km squared)	Shapefiles from 2012 Census	Use QGIS to calculate district area.	2012
Depth to Groundwater (meters)	MacDonald *et al.* (2012)	Overlay district boundaries on quantitative map of groundwater resources for Africa to generated district-level estimates of depth to groundwater.	2012

Table 3. *Summary statistics (district-level variables)*

	count	mean	sd	min	max
Actual Allocation (Millions of TZS)	602	684.36	864.21	0.00	8735.80
Absolute Vote Margin (%, MP)	658	0.49	0.25	0.01	0.92
CCM MP Margin	688	0.50	0.29	−0.28	1.00
Minister for Water's home district	688	0.01	0.12	0.00	1.00
Audit Opinion	600	2.63	0.50	1.00	3.00
Poverty Rate	688	0.82	0.07	0.65	0.93
Population (thousands)	688	319.71	161.55	45.38	1009.94
Area (km squared)	688	9380.54	8465.62	627.62	49601.80
Depth to Groundwater (meters)	688	3.82	2.05	0.94	9.72

Minister for Water's home district receiving significantly more than other districts, even after controlling for the formula criteria and political variables. Path dependence also helps to explain the central government's allocation decisions, with districts that received more money in previous years continuing to receive larger amounts in subsequent years. This pattern may also reflect the existence of multi-year projects, whose funding streams carry over multiple years. Model 4 suggests the ruling party is courting districts that defect to the opposition, but this pattern goes away once time-invariant controls are added in Model 5. The only one that is significant is population, which has the expected sign. Other coefficients remain largely unchanged with respect to their significance and magnitude.

As a robustness check, I also include interactions between the political variables and years until the next election. None of these register as significant.

In sum, while financial allocations to districts are fairly unresponsive to district-level needs, political favoritism does not appear to be driving deviations from the formula.

5. POLITICIZED MISALLOCATION BY LOCAL GOVERNMENTS

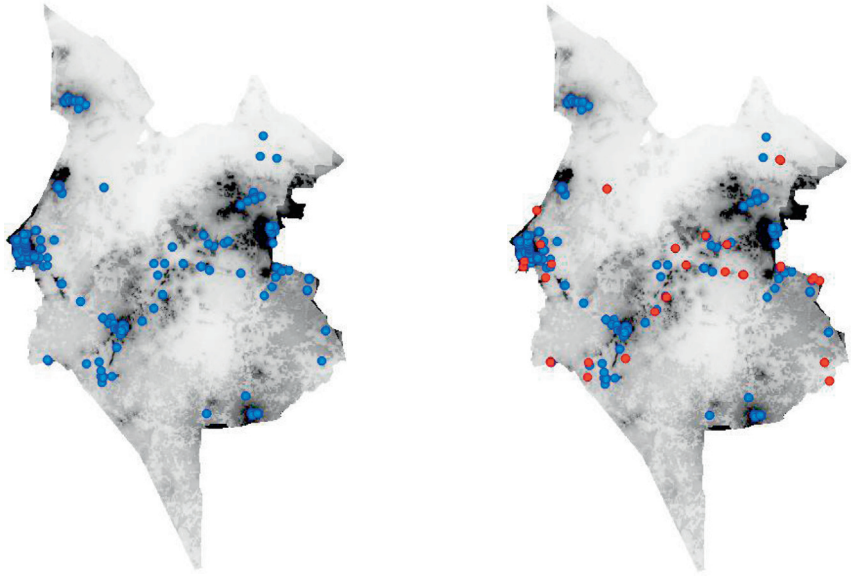
What happens when money reaches the district level? Although local politicians have more information about their constituents and should therefore be better equipped to target them effectively, decentralization can create greater scope for rent-seeking and corruption at the local government level (Prud'homme, 1995; Weingast, 2014). Beyond going into the pockets of local officials, the money that reaches the local level may not be spent to benefit the people that need it most.

Figure 1 illustrates this possibility with the example of Monduli district in northeastern Tanzania, which scores near the average for most of the indicators in my dataset. The left-hand panel of the figure shows the distribution of water points (in blue) in Monduli district as of 2006 (prior to the start of the WSDP). The darker areas of the map indicate those that are more densely populated. We see that there are substantial dark portions of the map with no water points, indicating that many people lacked access to clean water. Indeed, as of

Table 4. *DV = log of actual allocation to district, 2007–13*

	(1) Model	(2) Model	(3) Model	(4) Model	(5) Model
L.% Unserved	−0.17	0.11	0.10	0.10	−0.14
	(0.18)	(0.13)	(0.13)	(0.12)	(0.12)
L.% gravity schemes	0.02	0.14	0.15	0.14	0.03
	(0.22)	(0.16)	(0.16)	(0.16)	(0.16)
L.Audit Opinion	0.34***	0.14	0.13	0.14	0.16
	(0.12)	(0.11)	(0.11)	(0.11)	(0.11)
CCM MP Margin		0.09			
		(0.14)			
Minister for Water's home district		0.93**	0.94**	0.95**	0.97**
		(0.40)	(0.40)	(0.40)	(0.43)
L.Log of Funds Disbursed		0.16**	0.16**	0.15**	0.14**
		(0.07)	(0.07)	(0.07)	(0.07)
CCM Vote Share (President)			−0.17		
			(0.38)		
CCM lost dominance of district				0.19*	0.13
				(0.10)	(0.10)
Poverty Rate (2010, 1.25)					−0.31
					(0.81)
Population (log)					0.20***
					(0.08)
Area (log)					0.02
					(0.06)
Depth to Groundwater (meters)					0.03
					(0.02)
Year Fixed Effects	No	Yes	Yes	Yes	Yes
Observations	556	432	432	432	432
R^2	0.019	0.465	0.465	0.466	0.477
AIC	1877.99	1075.60	1075.81	1074.59	1073.78
BIC	1895.27	1124.43	1124.63	1123.41	1138.87

Standard errors in parentheses. The dependent variable is the log of the actual allocation to districts. All models restricted to rural districts and those for which year of construction is not missing. All models include standard errors clustered by district.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.



Water Points, 2006 Additional Water Points, 2006-2013 (in red)

Figure 1. *Allocation of water points in Monduli District, 2006–13. (For interpretation of the references to color in this figure legend, the reader is referred to the web version of this article.)*

2006, only 5.8% of Monduli's residents had access to a water point, where access is defined as living within 400 meters of an improved water source, with no more than 250 people per water point. [18] During 2006–13, Monduli district constructed 35 new water points, the placement of which is depicted in red in the right-hand panel of the figure. Had these new water points been distributed evenly across the district's unserved residents, they could have served up to 8,750 needy people. [19] We see that for the most part new infrastructure was not targeted to reach unserved areas, however, with only 316 people gaining access. Hence, the proportion of the population with access increased by just two-tenths of a percentage point, to 6%, over the seven-year period. This example illustrates that, within districts, local governments do not always target the neediest communities.

If unmet need is not the primary factor, what else might influence resource allocation at the local government level? The following section presents a series of hypotheses to explain patterns of distribution within districts.

(a) *Hypotheses (Local Government allocations)*

In the context of dominant party politics, I argue that local politicians will skew resources to favor their core supporters. While the legislative imperative to obtain supermajorities is lacking at the local level, winning by large margins could still conceivably deter opposition parties from entering local politics. In dominant party regimes where access to funding is controlled by the central government, local governments must rely heavily on the center, so local organizations, politicians, and voters have strong incentives to affiliate with the national ruling party (Scheiner, 2006). Presumably, if the national ruling party is seen as invincible, the cycle of dependence can be maintained.

Indeed, the survival of local politicians in dominant party regimes depends largely on their ability to "deliver" the votes of their constituents to party higher-ups. Such demonstrations of competence are rewarded by party bosses with continued access to resources from the central government. Local politicians then distribute these resources to their constituents in a manner intended to promote their reelection, at the same time shoring up support for the ruling party. By allocating local public goods to regime supporters, politicians help to cultivate mass support for the party, which is essential for regime survival (Magaloni, 2006). As Kramon (2013) notes, voters in Africa, and especially in rural Africa, value the delivery of local public goods. Furthermore, local public goods are often the only outputs of government that rural voters can observe. This suggests the following:

> *Punishment/Favoritism Hypothesis (Wards):* Within districts, water infrastructure will be disproportionately channeled to wards that support the ruling party at a higher rate.

Beyond electoral politics, another important factor motivating the distribution of resources within districts is the degree to which communities can effectively express their demands. This reflects the "demand-responsive approach" to rural water governance, although the notion of wealth facilitating demand is not unique to water. In their study of community-driven development projects in Tanzania, Baird *et al.* (2013) uncover a regressive pattern on the demand side, with richer districts producing more applications per capita and richer households more likely to be aware of the program. Another prominent study of a central government transfer program in Uganda finds that schools in better-off communities received more of their entitlements than did schools in poorer areas (Reinikka & Svensson, 2004). The authors interpret this as implying that these schools had greater bargaining power vis-à-vis local governments to secure greater shares of funding. This leads to my final hypothesis regarding the distribution of water infrastructure within districts:

> *Effective Demand Hypothesis (Wards):* Within districts, water infrastructure will be disproportionately channeled to wards with higher levels of income.

(b) *Empirical strategy (allocation of infrastructure to wards)*

In order to understand local government decision making about the placement of new water points, I model the number of water points built in each ward over the first seven years of the WSDP (2007–13) as a function of ward-level political variables and appropriate controls. Both my dependent and independent variables vary over time within wards, so I estimate a count model. Specifically, negative binomial regression is appropriate, since the dependent variable is overdispersed. [20]

Negative binomial regression entails that the mean response is related to the predictors (independent variables) through a link function, specifically the log link function. That is, the log of the outcome is predicted with a linear combination of the predictors. The model can thus be represented as follows:

$$log(Waterpoints_{it}) = \alpha_{it} + \beta_1 CCMSupport_{it-1} + \beta_2 Poverty_i + \beta_3 X_{it}$$

The dependent variable, $Waterpoints_{it}$, refers to the number of water points built in ward i in year t. $CCMSupport_{it-1}$ is a measure of support for the ruling party in ward i in the most recent election, $Poverty_i$ is a measure of ward-level poverty, and X is a vector of ward-level controls. A positive coefficient on *CCMSupport* would provide evidence in favor of the *Punishment/Favoritism Hypothesis* while a negative coefficient on *Poverty* would provide evidence in favor of the *Effective Demand Hypothesis*.

(c) *Ward-level data*

(i) *Water point construction*

The data on ward-level water point construction come from the water point mapping (WPM) exercise described above. The WPM database includes information on each water point's year of construction and geo-location, which allows me to create a time series of water point construction at the ward level. Note that the year of construction was not provided for 8,712 waterpoints (11.7%) of the 74,729 water points in the WPM database. In the main regressions for water point construction, I exclude all wards for which year of construction was not given for the majority of water points. Tables A2–A4 of the Appendix present a series of robustness checks showing that the main results hold under a variety of specifications that recode water points missing the year of construction.

It is also important to note that the WPM exercise was not limited to water points financed by the government. However, the dataset provides information on the source of funding for fewer than 25% of all 75,000 water points mapped. Of these 17,761 water points, the plurality are identified as being funded through governmental sources. Even if water points are funded by foreign sources, I still expect local politicians to have a say in their placement. This expectation reflects recent research demonstrating the extent to which politicians in low-capacity states manage to politicize the allocation of aid-funded projects. For instance, Briggs (2014) analyzes

Table 5. *Ward-level variables: data sources and construction*

Variable	Source	Method of construction	Years available
Number of water points built	Water Point Mapping database (wpm.maji.go.tz)	Map water points into wards; calculate annual number of water points built in each ward.	2006–13
Water point stock	Water Point Mapping database (wpm.maji.go.tz)	Map water points into wards; calculate annual total number of water points in each ward.	2006–13
CCM councillor won last election	National Electoral Commission (www.nec.go.tz)	Create dummy variable indicating whether CCM councillor won last ward election.	2005; 2010
CCM councillor's vote margin in last election	National Electoral Commission (www.nec.go.tz)	Subtract largest vote share for non-CCM candidate from CCM candidate's vote share.	2005; 2010
Turnout in Last Election (Proxy)	National Electoral Commission (www.nec.go.tz)	Divide total number of voters by estimated ward voting-age population.	2006–13
Poverty Rate	WorldPop (www.worldpop.org.uk)	Overlay ward boundaries on WorldPop poverty map of Tanzania to generate ward-level estimates of the proportion of people living on less than $1.25 per day.	2010
Population	2002 and 2012 Census (www.nbs.go.tz)	Assume constant growth rates within wards to estimate population in years intervening between Censuses.	2006–13
Distance from Primary Road (meters)	Open Street Map (www.openstreetmap.org)	Calculate distance from ward centroid to nearest primary road.	2012
Depth to Groundwater (meters)	MacDonald *et al.* (2012)	Overlay district boundaries on quantitative map of groundwater resources for Africa to generate ward-level estimates of depth to groundwater.	2012

Table 6. *Summary statistics (ward-level variables)*

	count	mean	sd	min	max
Number of water points built	15,570	1.44	5.07	0.00	227.00
Water point stock	15,570	30.73	32.22	1.00	384.00
CCM councillor won last election	13,919	0.90	0.30	0.00	1.00
CCM councillor's vote margin in last election	11,661	0.40	0.30	−0.72	1.00
Turnout in Last Election (Proxy)	11,661	0.49	0.19	0.01	1.94
Poverty Rate (% under 1.25 per day)	1769	0.82	0.09	0.26	0.95
Population	15,568	17103.82	13374.69	701.50	197379.00
Distance from Primary Road (meters)	1769	20385.68	20078.80	0.00	154448.80
Depth to Groundwater (meters)	1769	3.76	2.45	0.56	20.11

Summary statistics exclude urban wards and those where data on year of construction are missing. The variables for vote share, vote margin, and turnout are coded as missing for uncontested elections, of which there were 816 in the study period.

project aid in Kenya and finds it was disproportionately directed to the president's co-ethnics during 1989–95. Jablonski (2014) reaches a similar conclusion, analyzing the subnational distribution of World Bank and African Development Bank projects in Kenya from 1992 to 2010.

If in fact Tanzania's donors are operating without government interference, and foreign-funded water infrastructure follows a different logic of distribution, we may consider my estimates as a lower bound on the extent of politicized misallocation.

(ii) *Independent variables*

The first focal independent variable is support for the ruling party at ward level. I measure this in multiple ways, including: (i) a dummy variable indicating whether the ward elected a ruling party councillor in the most recent (2005 or 2010) election, and (ii) the CCM's margin of victory (where higher, positive margins indicate higher levels of support and negative margins indicate support for the opposition). I also consider whether the ward councillor was aligned with a CCM Member of Parliament in the previous election.

Turnout in the 2005 and 2010 elections serves as an additional measure of support for the ruling party, in keeping with recent research on dominant party regimes (Blaydes, 2011; Gandhi & Lust-Okar, 2009; Magaloni, 2006). The official election data from the Tanzanian National Electoral Commission (NEC) do not include turnout figures so I estimate turnout by dividing the total number of votes in a given ward by an estimate of the voting-age population in each ward in each election year.[21]

Table 7. *DV = number of water points built (negative binomial regression)*

	(1) Model	(2) Model	(3) Model	(4) Model	(5) Model	(6) Model	(7) Model
CCM councillor won last election	0.33***						
	(0.08)						
Poverty rate (1.25)	−0.72***	−0.98***	−0.65**	−0.47*			
	(0.26)	(0.27)	(0.26)	(0.28)			
L.Waterpoint stock	0.00***	0.00***	0.00***	0.00***	0.00***	−0.01***	−0.01***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Population (log)	0.59***	0.61***	0.59***	0.79***	0.79***	0.43***	0.75***
	(0.04)	(0.04)	(0.04)	(0.04)	(0.04)	(0.05)	(0.05)
Depth to groundwater	−0.02***	−0.01	−0.02***	0.00			
	(0.01)	(0.01)	(0.01)	(0.01)			
CCM councillor's vote margin in last election		0.50***				0.43***	
		(0.08)				(0.08)	
Councillor aligned with CCM MP in last election			0.12**				
			(0.06)				
Turnout in Last Election (Proxy)				0.02***	0.02***		0.02***
				(0.00)	(0.00)		(0.00)
Distance from Primary Road (log)					−0.05***		
					(0.01)		
Ward Fixed Effects	No	No	No	No	No	Yes	Yes
Observations	13,917	11,661	13,917	11,661	11,661	9601	9601
Number of Groups						1300	1300
Log likelihood	−18408.62	−15679.23	−18415.48	−15643.70	−15638.60	−10095.62	−9951.30

Standard errors in parentheses. The dependent variable is a count of waterpoints built. Negative binomial regression. All models exclude urban wards and those where data on year of construction are missing.
*$p < 0.10$.
**$p < 0.05$.
***$p < 0.01$.

As above, I measure poverty as the proportion of people living in poverty per square kilometer using estimates from the WorldPop high resolution poverty maps (Tatem *et al.*, 2015).

Control variables include existing water point stock, ward-level population and remoteness. This latter variable is important since water infrastructure is easier to build near major roads, whereas areas that are harder to reach may see less construction. I construct my measure of remoteness using roads data from OpenStreetMap. Using `R` and GIS I first determine the geographic coordinates of each ward's centroid, which then allows me to calculate the distance from the center of each ward to the nearest primary road. Finally, the ward-level regressions control for depth to groundwater using MacDonald *et al.*'s (2012) quantitative maps of groundwater resources for Africa.

Table 5 describes data sources and construction of ward-level variables. As noted above, Tanzania added over 30 districts during 2006–13. This time period also saw the creation of nearly 1,000 new wards, which I again collapse in with their "parents" in my analysis. [22]

Table 6 depicts summary statistics for the ward-level variables. We see that although the great majority of wards elect councillors from the ruling party, there is considerable variation in support for the ruling party candidates (as measured by their vote shares) and turnout.

(d) *Results: distribution of infrastructure within districts*

The ward-level analysis suggests that political favoritism can help to explain the inefficient placement of water points within districts. Table 7 shows that wards that support CCM candidates at higher rates benefit from greater levels of new infrastructure than wards demonstrating lower levels of support for the ruling party. Turnout and alignment between the ward councilor and MP from the ruling party also positively influence water point construction.

Given that the regression model is nonlinear, the coefficients are difficult to interpret. Negative binomial regression relies on a log-link function, so we may exponentiate the coefficients to observe the proportional change in the dependent variable given a one-unit change in a given predictor. Thus, the model tells us that wards which elect councillors from the ruling party get 38% more water points built in a given year compared with those represented by the opposition. [23] I have rescaled the turnout variable to range from 0 to 100 rather than 0 to 1 to ease interpretation of the coefficients. [24] Thus, a one percentage point increase in turnout is associated with a 2% increase in water point construction. Given that large swings in turnout are not uncommon, this association is non-negligible.

The regression analysis also supports the *Effective Demand Hypothesis*, given that poorer wards are less likely to benefit from new water point construction. Wards located further from a primary road are also less able to make their needs heard.

The control variables largely register the expected signs. More populous wards benefit from greater levels of construction. New water points are also more likely to be built in wards with higher levels of existing water point stock. While this could be evidence of redundancies like those described in Monduli district, it might also reflect the fact that extending the distribution of an existing water supply system can be easier and cheaper than building a new water system from scratch. Ease of construction also helps to explain the negative

Table 8. *DV = Ward-level access to clean water, 2013*

	(1) Model	(2) Model	(3) Model	(4) Model	(5) Model
CCM councillor won 2010 election	−0.00				
	(0.00)				
Proportion of ward pop. with access, 2006	0.97***	0.97***	0.98***	0.97***	0.97***
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Poverty rate (1.25)	−0.08***	−0.10***	−0.09***	−0.09***	
	(0.02)	(0.02)	(0.02)	(0.02)	
Population Density (log)	0.01***	0.01***	0.01***	0.01***	0.02***
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Depth to groundwater	0.00	0.00	0.00	0.00**	0.00*
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
CCM councillors vote margin in 2010 election		−0.00			
		(0.01)			
Councillor aligned with CCM MP in 2005 election			−0.01		
			(0.00)		
Turnout in 2010 Election (Proxy)				0.03**	0.04***
				(0.01)	(0.01)
Distance to nearest primary road					−0.00***
					(0.00)
Observations	1588	1279	1588	1279	1279
R^2	0.883	0.879	0.883	0.879	0.878
AIC	−4802.14	−3673.59	−4803.78	−3679.39	−3670.58
BIC	−4769.92	−3642.66	−4771.56	−3648.46	−3639.66

Standard errors in parentheses.
* $p < 0.10$.
** $p < 0.05$.
*** $p < 0.01$.

sign on distance to the nearest primary road—that is, extending the water network is likely more difficult in more remote areas. Note that when ward fixed effects are included the sign on existing water point stock flips, implying that within a given ward, new construction is less likely to occur in wards that are already fairly well-served.

As a robustness check, I estimate logistic regression models where the dependent variable is a dummy indicating whether water point construction occurred in each ward in each year. The results, shown in Appendix Table A5, confirm the importance of turnout in predicting where the local government will build new water points.

In addition, I estimate a set of regressions with 2013 levels of ward-level access as the dependent variable.[25] The results, shown in Table 8, provide additional support for the political favoritism story, given that wards which turn out at higher rates exhibit higher levels of access. These regressions also confirm the pattern of poorer, more remote wards being less likely to enjoy improved access to clean water. As above, there is also a fair degree of stickiness, with wards exhibiting high levels of access in 2013 tending to be those that were better off prior to the start of the WSDP.

In sum, these results imply that relatively wealthier communities are better at expressing their demands, and that those demands are more likely to be met in places with higher levels of demonstrated support for the ruling party.

6. DISCUSSION

The preceding analysis advances our understanding of decentralized service delivery under dominant party rule in a number of important ways.

First, the result for turnout is noteworthy in light of the political context. Given the CCM party's interest in obtaining supermajorities, voter turnout is likely a closely monitored metric of regime support. While turnout is primarily thought to be important in Presidential contests as a signal of regime invincibility (Gandhi & Lust-Okar, 2009), the hierarchical structure of Tanzania's dominant party regime suggests that it could very well matter at lower levels of government too.

Failing to vote may also represent a way of expressing opposition to the ruling party. Overtly supporting an opposition party can have negative consequences, in terms of the government withholding resources (the punishment regime described above)—or at least many Tanzanians fear that it can. Recent empirical work from Tanzania demonstrates that many voters fear the consequences of being known to support the opposition. Croke (2016) presents the results of a 'quasi-experiment' that compares survey responses for people who answer in the presence of a local party representative[26] with those who answer to survey enumerators only. He finds that respondents are significantly less likely to express support for the opposition in the presence of local party agents. Failing to vote may therefore be a safer way to express dissatisfaction with the ruling party.

Recent empirical work confirms the notion that turning out to vote in Tanzania tends to be rewarded. Baird *et al.*'s (2013) analysis of the Tanzanian Social Action Fund (TASAF) finds that higher levels of turnout at the district level are associated with higher numbers of TASAF applications. Within districts, wards with higher levels of voter turnout receive more TASAF funds per capita. Baird *et al.* (2013) interpret turnout as a measure of political engagement, an interpretation which also lends support to the *Effective Demand Hypothesis*. Presumably, people living in wards with higher levels of turnout are more likely to be politically engaged, and so more likely to be paying attention and monitoring their politicians. Hence, it is harder to ignore their demands—for new water point infrastructure or other public goods.

On the other hand, poverty appears to constrain communities' abilities to effectively express their demands. In the context of the WSDP, beneficiary communities are expected to raise initial financial contributions for the capital costs involved in developing water supply and sanitation facilities. Required community contributions range from 2.5% of capital costs for gravity-fed or pumped and piped schemes, to 30% in the case of spring protection. Such contributions can be substantial. For instance, the average cost of a small, gravity-fed piped scheme was projected to be $76,300 USD in 2006 (Ministry of Water, 2006b, p. 28). The community contribution in such case would therefore amount to $1,907.50. While such a figure seems manageable when divided among the 1,500 beneficiaries that ought to benefit from such a scheme, determining who the beneficiaries will be and how to best raise money from them has proven challenging. Even small sums can be difficult when the majority of the population survives on less than $1.25 per day, as is the case in many rural wards. Furthermore, many Tanzanians regularly lack access to cash. According to the most recent (2014) Afrobarometer survey, over 70% of rural respondents reported that in the past year they had gone without a cash income several times or more during the past year.

The WSDP also requires beneficiary communities to open a bank account for their water and sanitation funds. Given that banks tend to concentrate in urban areas, this presents another barrier (and also explains the negative sign on distance to nearest road in my regressions). Indeed, in their study of WSDP implementation in four rural districts in Tanzania, Jiménez Fernández de Palencia and Pérez-Foguet (2011) also find that more populated and well communicated villages (with easier access to the bank offices located in the capital) were better able to express their demands (by making the needed cash contributions).

The results presented in this paper contrast with those of another recent study of distributive politics from Tanzania. Rosenzweig (2015) considers how changes in the degree of electoral competition relate to changes in public goods provision—specifically, access to electricity and access to piped water. He finds that access increases in districts that become more competitive, suggesting an alternative strategy of targeting by the CCM. However, Rosenzweig is examining different goods, which may entail different logics of distribution, as other authors have shown (Kramon & Posner, 2013). Electricity provision is the purview of the central government, which also likely played an important role in determining access to piped water for the period he studies. Fewer than 6% of rural Tanzanians currently have access to piped water (World Health Organization & UNICEF, n.d.) and such projects are typically beyond the scope of what local politicians can influence. Moreover, during the time period Rosenzweig considers (1988–2002), rural water provision had not yet been decentralized in the manner described above. Hence, while Rosenzweig's study focuses on the actions of the central government, this article speaks to the logic of local government distribution.

7. CONCLUSION

Decentralized service delivery provides a number of opportunities and challenges to the governments and citizens in low- and middle-income countries. The challenges are exacerbated in the context of dominant party rule, as I illustrate with the case of the Tanzanian water sector. At the national level, political interference in the allocation of money to districts is not obvious, with the exception of consistent hometown favoritism. Political factors appear to exert greater influence at the local level. The preceding analysis suggests that ward councillors affiliated with the ruling party channel resources to their core supporters. This serves to not only secure their careers but also the longevity of the ruling party. As such, Tanzania's ward councillors appear to be more accountable to party bosses than to the constituents who elected them. This pattern of allocation has resulted in leaving many of the neediest communities without access to a vital public service.

The behavior of ward councillors in Tanzania is likely not unique. Jensen and Justesen's (2014) analysis of survey data from 18 countries in Africa finds that encounters with local councillors are positively associated with vote buying, while direct contacts with Members of Parliament have little effect. This argument also has normative implications. As Yilmaz, Beris, and Serrano-Berthet (2010) explain, an emerging literature has begun to compare partisan systems of local government with non-partisan ones. Advocates of non-partisanship in local elections maintain that local governments tend to concern themselves with issues on which there can be no division along party lines. Hence, partisan local governments risk policy-making becoming contaminated by patronage and clientelism instead of focusing on long-term benefits. In Ghana, for example, local elections are held a non-partisan basis in which candidates stand as individuals (Crawford, 2008). India's panchayats also operate on a non-partisan basis by law (Yilmaz *et al.*, 2010).

Finally, this study highlights the limits of the "demand-responsive approach" to public service delivery in a dominant party regime context. "Demand" tends to be understood primarily in terms of ability to pay—meaning that the demands of poorer communities, as well as those living in more remote areas, continue to go unmet. New strategies for delivering aid could address some of these challenges. The Tanzanian water sector's major donors are beginning to experiment with results-based financing, paying local government authorities for each additional well-maintained and functioning water point. Such efforts are promising, though they may ultimately serve to promote accountability by the government to Tanzania's donors rather than to the country's citizens. That said, Tanzania's dependence on traditional donors has been declining as domestic revenues have increased, Chinese investment has grown, and a significant amount of natural gas has been discovered (Swedlund, 2013). While this may limit the ability of donors to promote changes in government behavior, new resources in the hands of rural citizens may empower them to demand changes themselves.

8. ACKNOWLEDGMENTS

I thank Miriam Golden, Daniel Posner, Jean Ensminger, Chad Hazlett, Sarah Brierley, Lauren Peritz, David Taylor, Lisa Mueller, Raffaele Asquer, Luke Sonnet, Devesh Tiwari, and three anonymous reviewers for their helpful comments and suggestions. The paper has also benefited from comments by participants in the Comparative Politics Reading Group at UCLA, the APSA Africa Workshop in Mozambique, and the American Political Science Association Annual meeting. The U.S. National Security Education Program provided financial support. Finally, I am grateful to Twaweza for hosting me during my fieldwork and inspiring this article's title.

NOTES

1. Throughout this article, "water points" refer to the point sources that account for the overwhelming majority of water supply infrastructure in rural Tanzania. These include communal standpipes, hand pumps, and improved springs.

2. Burgess, Jedwab, Miguel, Morjaria, and Miquel (2015) is a notable exception.

3. Note that the focus on rural water provision is also driven by data availability. The water point mapping exercise that I draw on was only conducted in rural areas. Furthermore, the criteria that guide resource allocation to rural areas is much more clearly specified than that guiding the distribution of resources to urban areas, as funding for urban water supply tends to be concentrated in a few large, earmarked projects.

4. Author's analysis of the Autocratic Regimes Data Set (Geddes, Wright, & Frantz, 2014).

5. Tanzania's ruling party at independence was called the Tanganyika African National Union (TANU); in 1977 TANU merged with the ruling party in Zanzibar to form the current CCM party.

6. Members of Parliament representing serving the district also serve on the district council, as do female representatives appointed in proportion with their parties' elected seats (Venugopal & Yilmaz, 2010). Each district comprises one to three Parliamentary constituencies.

7. Official results for the 2015 ward councillor elections have not been made public at the time of this writing. The increased number of local elections reflects the creation of new wards during 2005–10. Note that these figures do not include wards where elections were uncontested (resulting in a CCM candidate taking office). There were 217 uncontested elections for ward councillor in 2005 and 599 in 2010.

8. These include the World Bank, the African Development Bank, the UK Department for International Development and a handful of others.

9. This paper focuses on the allocation of development (capital) spending, which accounts for around 90% of the water sector budget in Tanzania (Quinn & Tilley, 2013). The formula for the allocation of the development budget is described in Section (b) of Annex 4 of the WSDP Programme Implementation Manual (Ministry of Water, 2006b).

10. http://www.mowimis.go.tz/.

11. Note that I am not necessarily using the same underlying data as the Government of Tanzania to apply the formula. However, I suspect the government's data are less reliable since I am relying on information from the WPM exercise whereas the central government typically relies on reports from district officials, who aggregate the information they receive from the villages within their jurisdictions (Harris, 2012). District officials may have an incentive to misrepresent the true scenario—making things look worse than they really are can result in more money flowing in. The relative fungibility of funds for water likely increases this incentive.

12. The exercise was contracted out to a local firm (GeoData) and funded in part by a host of other donors including: the African Development Bank, UNDP, EU, GIZ (Germany) SNV (Netherlands), JICA (Japan), DFID (UK), Norad (Norway), Sida (Sweden), AFD (France), USAID (USA), MCC (USA) (For more information see http://wpm.maji.go.tz/).

13. For more detail on the criteria corresponding to the different opinions, see United Republic of Tanzania (2013).

14. Recall that each district contains one to three Parliamentary constituencies.

15. See Section A1.2 of the Appendix for details on variable construction.

16. While poverty rates arguably vary over time, I only have estimates for 2010.

17. These maps are based on GPS located national household survey data, used to establish poverty rates at the level of the survey cluster. A Bayesian geostatistical modeling framework was then established to exploit spatiotemporal relationships within the data, leverage ancillary information from an extensive set of covariates, and rigorously handle uncertainties at all stages to generate high-resolution gridded estimates (1 km-by-1 km). For more information on the methodology, see Tatem, Gething, Pezzulo, Weiss, and Bhatt (2015). The fact that my measure of poverty is predicted rather than observed suggests possible attenuation bias. That is, the effect of poverty that I predict on my dependent variable is likely to be smaller than the actual effect. Note that other recent works on subnational distribution in Tanzania have relied on poverty maps for ward-level estimates as well (Baird, McIntosh, & Özler, 2013).

18. This definition of access reflects Tanzania's National Water Policy (United Republic of Tanzania, 2002, p. 34). Section A1.2 of the Appendix describes the process through which I calculate access in greater detail.

19. This assumes each new water point could serve 250 people.

20. A variable is considered to be overdispersed when the conditional variance is greater than the conditional mean. This is a frequent phenomenon in count data, particularly when there are a large number of zeroes.

21. Voting-age population is not provided by the NEC, either, so I use population data from the 2012 and 2002 Censuses, and scale it back to 2005 and 2010 levels assuming constant population growth within wards. I calculate the proportion of the population that is of voting age using the proportions indicated by the International Institute for Democracy and Electoral Assistance (IDEA) Unified Database (http://www.idea.int/uid/).

22. I could not locate any official documentation regarding the creation of new wards to facilitate the required matching. I therefore rely on shapefiles associated with Tanzania's 2002 and 2012 Censuses. By overlaying the two shapefiles on top of each other I am able to match 3,290 of the 2012 wards with 2,398 "parent" wards from the 2002 Census.

23. This is the result of exponentiating the coefficient on CCM councillor: $e^{0.32} = 1.38$.

24. There are a few values of turnout greater than 100 given that this measure is a proxy based on the assumption of constant annual population growth within wards between the two Census periods (2002 and 2012). Wards that grew more quickly during the beginning of this period would have artificially smaller denominators in the turnout calculations.

25. Access is defined as living within 400 meters of an improved water point, with each water point serving no more than 250 people, in accordance with Tanzania's National Water Policy (United Republic of Tanzania, 2002, p. 34). See Section A1.2 of the Appendix for details on the access calculations.

26. Specifically, Croke looks at the effects of the ten cell leader being present. The ten cell is a political institution dating back to independence, which comprises every ten households at the village level. Historically, ten cell leaders (known in Kiswahili as the *balozi* or *mjumbe*) were elected from the local party membership and formed the village council. Following the introduction of multi-partyism, ten cell leaders were supposed to be replaced by sub-village chairmen, with party membership no longer a prerequisite for office (Heald, 2006). However, Croke (2016) shows that in practice, 10 cell leaders remain important local party agents and monitors of regime support.

REFERENCES

Alderman, H. (2002). Multi-tier targeting of social assistance: The role of intergovernmental transfers. Multi-tier targeting of social assistance: The role of intergovernmental transfers. *The World Bank Economic Review, 15*(1), 33–53.

Alderman, H. (2002). Do local officials know something we don't? Decentralization of targeted transfers in Albania. *Journal of Public Economics, 83*(3), 375–404.

Baird, S., McIntosh, C., & Özler, B. (2013). The regressive demands of demand-driven development. *Journal of Public Economics, 106*(10), 27–41.

Bardhan, P., & Mookherjee, D. (2006). Decentralisation and accountability in infrastructure delivery in developing countries. *The Economic Journal, 116*, 101–127.

Bardhan, P., & Mookherjee, D. (2006). Decentralization, corruption and government accountability. In S. Rose-Ackerman (Ed.), *International handbook on the economics of corruption* (pp. 161–188). Northampton, MA: Edward Elger.

Bardhan, P., & Mookherjee, D. (2006). Pro-poor targeting and accountability of local governments in West Bengal. *Journal of Development Economics, 79*(2), 303–327.

Bayliss, K. (2008). Tanzania: Newspapers Banned amid Increasing Hostility towards Free Speech From Nationalization to Privatization – And Back?. In K. Bayliss, & B. Fine (Eds.), *Privatization and alternative public sector reform in Sub-Saharan Africa*. Palgrave Macmillan.

Bird, R. (1994). *Decentralizing infrastructure: For good or for ill?*. Washington, DC: World Bank, World Bank Policy Research Working Paper 1258.

Blaydes, L. (2011). *Elections and distributive politics in Mubarak's Egypt*. Cambridge University Press.

Boex, J., & Martinez-Vazquez, J. (2006). *Local government finance reform in developing countries: The case of Tanzania*. New York, NY: Palgrave Macmillan.

Briggs, R. C. (2014). Aiding and abetting: Project aid and ethnic politics in Kenya. *World Development, 64*, 194–205.

Burgess, R., Jedwab, R., Miguel, E., Morjaria, A. Padro, & Miquel, G. (2015). The value of democracy: Evidence from road building in Kenya. *American Economic Review, 2015*(6), 1817–1851.

Chase, R. S. (2002). Supporting communities in transition: The impact of the Armenian social investment fund. *The World Bank Economic Review, 16*(2), 219–240.

Conyers, D. (2007). Decentralisation and service delivery: Lessons from Sub-Saharan Africa. *IDS Bulletin, 38*(1), 18–32.

Crawford, G. (2008). *Decentralization and the limits to poverty reduction: Findings from Ghana, 36*(2), 235–258.

Croke, K. (2016). Tools of single party hegemony in Tanzania: evidence from surveys and survey experiments. *Democratization*, 1–24.

Crook, R. C. (2003). Decentralisation and poverty reduction in Africa: The politics of local–central relations. *Public Administration and Development, 23*(1), 77–88.

de Azevedo, L. G. T., & Baltar, A. M. (2005). Water pricing reforms: Issues and challenges of implementation. *International Journal of Water Resources Development, 21*(1), 19–29.

Diaz-Cayeros, A., Estevez, F., Magaloni, B. (2012). *Strategies of vote buying: Democracy, clientelism, and poverty relief in Mexico*. Unpublished manuscript.

Faguet, J. P. (2012). *Decentralization and popular democracy: Governance from below in Bolivia*. University of Michigan Press.

Galasso, E., & Ravallion, M. (2005). Decentralized targeting of an antipoverty program. *Journal of Public Economics, 89*, 705–727.

Gandhi, J., & Lust-Okar, E. (2009). Elections under authoritarianism. *Annual Review of Political Science, 12*, 403–422.

Geddes, B., Wright, J., & Frantz, E. (2014). Autocratic breakdown and regime transitions: A new data set. *Perspectives on Politics, 12*(02), 313–331.

Giné, R., & Pérez-Foguet, A. (2008). Sustainability assessment of national rural water supply program in Tanzania. *Natural Resources Forum, 32*, 327–342.

Golden, M., & Min, B. K. (2013). Distributive politics around the world. *Annual Review of Political Science, 16*, 73–99.

Green, E. (2011). Decentralization and political opposition in contemporary Africa: Evidence from Sudan and Ethiopia. *Democratization, 18*(5), 1087–1105.

Green, M. (2003). Globalizing development in Tanzania: Policy franchising through participatory project management. *Critique of Anthropology, 23*(2), 123–143.

Grossman, G., & Lewis, J. I. (2014). Administrative unit proliferation. *American Political Science Review, 108*(1), 196–217.

Harris, T. (2012). *Review of Tanzania's water statistics*. Report commissioned by Accountability in Tanzania.

Heald, S. (2006). State, law, and vigilantism in northern Tanzania. *African Affairs, 105*(419), 265–283.

Herrera, V., & Post, A. E. (2014). Can developing countries both decentralize and depoliticize urban water services? Evaluating the legacy of the 1990s reform wave. *World Development, 64*, 621–641.

Hoffman, B. D., & Robinson, L. (2009). Tanzania's missing opposition. *Journal of Democracy, 20*, 123–136.

Jablonski, R. S. (2014). How aid targets votes: The impact of electoral incentives on foreign aid distribution. *World Politics, 66*(2), 293–330.

Jensen, P. S., & Justesen, M. K. (2014). Poverty and vote buying: Survey-based evidence from Africa. *Electoral Studies, 33*(2014), 220–232.

Jiménez, A., & Pérez-Foguet, A. (2010). Challenges for water governance in rural water supply: Lessons learned from Tanzania. *International Journal of Water Resources Development, 26*(2), 235–248.

Jiménez Fernández de Palencia, A., & Pérez-Foguet, A. (2011). Implementing pro-poor policies in a decentralized context: The case of the Rural Water Supply and Sanitation Program in Tanzania. *Sustainability Science, 6*(1), 37–49.

Joseph, R. A. (2014). *Democracy and prebendal politics in Nigeria* (Vol. 56) New York, NY: Cambridge University Press.

Kessy, A. T., & McCourt, W. (2010). Is Decentralization still recentralization? The local government reform programme in Tanzania. *International Journal of Public Administration, 33*(12–13), 689–697.

Koehler, J., Thomson, P., & Hope, R. (2015). Pump-priming payments for sustainable water services in rural Africa. *World Development, 74*, 397–411.

Kramon, E. (2013). *Vote buying and accountability in democratic Africa*, PhD disstertation. Los Angeles: University of California, Los Angeles.

Kramon, E., & Posner, D. N. (2013). Who benefits from distributive politics? How the outcome one studies affects the answer one gets. *Perspectives on Politics, 11*(02), 461–474.

Kramon, E., & Posner, D. N. (2016). Ethnic favoritism in primary education in Kenya. *Quarterly Journal of Political Science, 11*(1), 1–58.

Lockwood, H., & Smits, S. (2011). *Supporting rural water supply*. Rugby, UK: Practical Action Publishing.

Loftus, A. (2009). Rethinking political ecologies of water. *Third World Quarterly, 30*(5), 953–968.

MacDonald, A., Bonsor, H., Dochartaigh, B. E. O., & Taylor, R. (2012). Quantitative maps of groundwater resources in Africa. *Environmental Research Letters, 7*, 1–7.

Magaloni, B. (2006). *Voting for Autocracy*. New York, NY: Cambridge University Press.

Magaloni, B., & Kricheli, R. (2010). Political order and one-party rule. *Annual Review of Political Science, 13*, 123–143.

Marks, S. J., & Davis, J. (2012). Does user participation lead to sense of ownership for rural water systems? Evidence from Kenya. *World Development, 40*(8), 1569–1576.
Marson, M., & Savin, I. (2015). Ensuring sustainable access to drinking water in sub-Saharan Africa: Conflict between financial and social objectives. *World Development, 76*, 26–39.
Mclean, K. (2002). Decentralization of the water supply. In J. Litvack, & J. Seddon (Eds.), *Decentralization briefing notes*. Washington, DC: World Bank Institute.
Ministry of Water. (2006). *Water sector development programme 2006–2025*.
Ministry of Water. (2006). *Water Sector Development Programme (WSDP) Programme Implementation Manual*. Annex 4: Formula based allocation of financial resources to local government authorities.
Moe, C. L., & Rheingans, R. D. (2006). Global challenges in water, sanitation and health. *Journal of Water and Health, 4*(S1), 41–57.
Öhler, H., & Nunnenkamp, P. (2014). needs-based targeting or favoritism? The regional allocation of multilateral aid within recipient countries. *Kyklos, 67*(3), 420–446.
Olowu, D. (2003). Local institutional and political structures and processes: Recent experience in Africa. *Public Administration and Development, 23*, 41–52.
Pallotti, A. (2008). Tanzania: Decentralising power or spreading poverty?. *Review of African Political Economy, 35*(116), 221–235.
Paxson, C., & Schady, N. R. (2002). The allocation and impact of social funds: Spending on school infrastructure in Peru. *The World Bank Economic Review, 16*(2), 297–319.
Prasad, N. (2007). Privatisation of water: A historical perspective. *Law, Environment and Development Journal, 3*(2), 219–233.
Prud'homme, R. (1995). The dangers of decentralization. *The World Bank Research Observer, 10*(2), 201–220.
Quinn, A., & Tilley, H. (2013). *Rapid budget analysis of the water sector in Tanzania*. Overseas Development Institute.
Reinikka, R., & Svensson, J. (2004). Local capture: Evidence from a central government transfer program in Uganda. *The Quarterly Journal of Economics, 119*(2), 679–705.
Riedl, R. B., & Dickovick, J. T. (2014). Party systems and decentralization in Africa. *Studies in Comparative International Development, 49*(3), 321–342.
Roop, S., & Weghorst, K. (2016). The 2015 national elections in Tanzania. *Electoral Studies, 43*, 190–194.
Rosenzweig, S. C. (2015). Does Electoral competition affect public goods provision in dominant-party regimes? Evidence from Tanzania. *Electoral Studies, 39*, 72–84.
Rout, S. (2014). Institutional variations in practice of demand responsive approach: Evidence from rural water supply in India. *Water Policy, 16*(4), 650–668.
Savenije, H. H., & van der Zaag, P. (2002). Water as an economic good and demand management paradigms with pitfalls. *Water International, 27*(1), 98–104.
Scheiner, E. (2006). *Democracy without competition In Japan: Opposition failure in a one-party dominant state*. New York, NY: Cambridge University Press.
Slater, D. (1989). Territorial power and the peripheral state: The issue of decentralization. *Development and Change, 20*(3), 501–531.
Stokes, S. C., Dunning, T., Nazareno, M., & Brusco, V. (2013). *Brokers, voters, and clientelism: The puzzle of distributive politics*. Cambridge University Press.
Swedlund, H. J. (2013). From donorship to ownership? Budget support and donor influence in Rwanda and Tanzania. *Public Administration and Development, 33*, 357–370.
Tatem, A., Gething, P., Pezzulo, C., Weiss, D., Bhatt, S. (2015). *Development of pilot high-resolution gridded poverty surfaces: Methods working paper*. http://www.worldpop.org.uk/resources/docs/WorldPop-poverty-mapping-methods.pdf
UNICEF and World Health Organization. (2015). *Progress on Sanitation and Drinking Water. Progress on sanitation and drinking water*. Update and MDG Assessment.
United Republic of Tanzania. (2002). *National Water Policy*. http://www.egov.go.tz/egovuploads/documents/WaterPolicyen.pdf
United Republic of Tanzania. (2011). *Annual Assessment of Minimum Conditions and Performance Measures for Local Councils under LGDG System for FY 2011/12*. National Synthesis Report.
United Republic of Tanzania. (2013). *General Report on LGAs 2011/2012*. Annual General Report of the Controller and Auditor General.
van Ginneken, M., Netterstrom, U., & Bennett, A. (2011). *More, better, or different spending? Trends in public expenditure on water and sanitation in sub-Saharan Africa*. Washington, DC: World Bank (Water Papers 67321-AFR).
Venugopal, V., & Yilmaz, S. (2010). Decentralization in Tanzania: An assessment of local government discretion and accountability. *Public Administration and Development, 30*(3), 215–231.
Weingast, B. R. (2014). Second generation fiscal federalism: Political aspects of decentralization and economic development. *World Development, 53*, 14–25.
Weinstein, L. (2011). The politics of government expenditures in Tanzania, 1999–2007. *African Studies Review, 54*(01), 33–57.
World Bank. (1994). *Implementing the Water resources mandate of agenda 21: The promise and the challenges for OECD countries*. Background paper prepared by the Water and Sanitation Division of the World Bank.
World Health Organization and UNICEF. (n.d.). *Joint Monitoring Programme for Water Supply and Sanitation: Data and Estimates*. Available for download at http://www.wssinfo.org/data-estimates/.
Yilmaz, S., Beris, Y., & Serrano-Berthet, R. (2010). Linking local government discretion and accountability in decentralisation. *Development Policy Review, 28*(3), 259–293.

APPENDIX A. SUPPLEMENTARY DATA

Supplementary data associated with this article can be found, in the online version, at http://dx.doi.org/10.1016/j.worlddev.2016.11.019.