Governing Informality:

Drivers of Service Provision in Nigeria's Food Wholesale Markets

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Abstract

How does governance affect service provision in Nigeria's wholesale food markets? Sufficient services, such as water, waste collection, and toilet access, are essential for enhancing the safety of healthy and nutritious foods, such as vegetables and fish, and improving the welfare of those who depend on informal trade for their livelihoods. However, these are often substandard in many informal markets, exposing traders and consumers who rely on such markets to higher levels of foodborne hazards and undermining the efficacy of other food safety interventions. Using data from 299 wholesale markets across seven states and the Federal Capital Territory of Nigeria, this paper examines how four governance mechanisms—incentives, information, authority, and capacity—are associated with five services: waste collection, market toilet access, water provision, electricity, and security. We find that having an elected, rather than appointed, market chairperson positively influences waste collection and provision of security. By contrast, larger utility investments, such as water and electricity, are less influenced by governance structures within the markets. Markets located in local government areas (LGAs) under appointed rather than elected governments are associated with worse performance across all services, demonstrating that efforts to address market service delivery need to be embedded in a holistic understanding of multi-level governance dynamics. The findings emphasize that improving food safety and traders' welfare via better service delivery requires empowering stakeholders in informal market governance who not only hold the authority to deliver a diverse set of services but also possess the political incentives to do so.

Keywords

Food safety, governance, informal markets, Nigeria, service delivery, wholesale markets

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Ethics review

Ethical approval for the surveys in this project was obtained by Michigan State University's Institutional Review Board (STUDY00007403). Data collection was conducted in accordance with the local legislation and institutional requirements. All participants provided their written informed consent to participate in this study.

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1. Introduction

How does governance impact service provision in informal food markets? Addressing this question is particularly important given that informal wholesale and retail food markets are essential to the employment and consumer behaviors of a large share of the population in low- and middle-income countries (LMICs). For instance, over 65 percent of fresh food is distributed through traditional markets, while slightly over 10 percent is sold through modern retail channels in LMICs (Haddad et al., 2016). Wholesale food markets serve as essential hubs where professional vendors and buyers trade fresh produce such as fruits, vegetables, meat, fish, and dairy, linking farmers to consumers and ensuring efficient food supply chains (Tefft et al., 2017). These markets are crucial for the agri-food value chain, offering services to farmers and providing fair prices for their produce. Moreover, through license fees, levies on market stalls, and presumptive taxes on estimated turnover, informal markets can also generate significant revenue for local governments (Prichard & van den Boogaard, 2015; Resnick, 2021a).

Despite their importance for jobs, informal food markets in LMICs typically suffer from poor service provision, including lack of sanitation facilities, safe water supplies, proper waste management, and a dearth of fire extinguishers. In Wakulima fresh wholesale market in Nairobi, Kenya, garbage can pile up for weeks before being collected (Wekesa, 2024). In Lusaka, Zambia, poor water and sanitation conditions caused the city's largest wholesale market, New Soweto, to close down for nearly two months during the height of a cholera crisis in 2017 (Siame et al., 2020) and again in 2023. Traders lost millions of dollars in goods, cash, and property when Mbare Market—the largest wholesale and retail market in Harare, Zimbabwe—went up in flames in October 2024 (Karombo, 2024). Violence in marketplaces—caused by communal conflicts, criminal actors, government officials, and household members—also frequently occurs (WIEGO, 2018).

To better understand how governance mediates service delivery outcomes in informal food market settings, we focus in this paper on Nigeria where rapid population growth and food price inflation make access to affordable, healthy foods so critical. For many Nigerian consumers, access to foods such as fish and vegetables is predominantly through informal markets (Resnick et al., 2019). However, these markets often lack sufficient infrastructure, including access to clean water, proper sanitation, and adequate food storage facilities (Cortese et al., 2016; Muyanja et al., 2011), which increases the risk of consuming contaminated food. Several studies have uncovered dangerous bacteria and toxins in a majority of raw vegetables and smoked fish in Nigerian markets (Grace, Dipeolu, and Alonso 2019; Nordhagen et al. 2023; Martins et al, 2025). In addition to the health consequences of such food safety hazards, there are also economic costs. For instance, Nigeria's economic burden of food borne diseases, measured by the costs of mortality and morbidity, is estimated at over USD 6 billion –the fourth highest in the world (Jaffee et al., 2019). Security infrastructure is equally important given that terrorists and criminal groups in some Nigerian states target markets for economic resources or intentionally attack them to disrupt local trade (Sampaio, 2022).

Drawing on a survey of the full universe of 299 vegetable and fish wholesale markets across seven states and the Federal Capital Territory (FCT) in Nigeria, this paper examines how governance affects differential provision of water, toilets, waste collection, electricity, and security across these markets. In doing so, we explore four possible mechanisms that link governance to service provision: (1) information, (2) authority, (3) capacity, and (4) incentives. For services to be provided, those responsible for markets require *information* about what is needed, and this information may come from close oversight of the market, from traders' associations representing their members' needs, or from the presence of forums to convey complaints to market authorities. Likewise, different services may fall under the mandate of different entities, and therefore, *authority* to provide a service is a critical consideration. *Capacity*, particularly via human and financial resources, are essential for investing in and implementing services and require sufficient revenue mobilization. Finally, Nigeria's food markets legally are under the mandate of the country's Local Governance Area (LGA) authorities—the third tier below the federal and state governments—and often managed by a market committee consisting of a chairperson, vice-chairperson, secretary, and treasurer. LGA and market committee members need to have *incentives* to improve the working environment of traders, and such incentives can derive from whether they are appointed or elected by the constituencies they are meant to serve.

We find that government oversight through the presence of an LGA office in the market is not very consequential, but markets sited on government land have higher levels of functional toilets. Elected chairpeople are most important for security services and waste collection while product associations tend to be negatively associated with the latter. By contrast, tax payments to the LGAs are not associated with improved services across the markets. This largely reflects observations of those elsewhere that revenues generated from market fees rarely are reinvested in the upkeep or expansion of improved services (FAO and FLAMA, 2022). Moreover, markets located in LGAs overseen by caretaker committees are associated with poorer performance on all services. In such LGAs, state governors have appointed leaders rather than allowing them to be elected by local citizens. This suggests that incentives to provide services via mechanisms of electoral accountability play a powerful role that is missing in those LGAs.

The paper offers several contributions. First, the nested design structure where the market sample spans multiple states and LGAs allows for exploring how the broader macro setting in which markets are located interacts with the micro dynamics of everyday market functions. This therefore enables us to build on important insights about Nigerian market governance at multiple scales that hitherto have been centered on just one or two cities in the country (Grossman, 2020; Grossman & Holland, 2023; Resnick et al., 2019). Second, the analysis draws on a rich dataset that encompasses a broad range of characteristics related to market governance that, to our knowledge, have never been explored, including the selection modalities for, and individual characteristics of, market leaders. Third, the sampled wholesale markets represent an important share of Nigeria's fresh fruit, vegetable, and fish trade, which are critical for healthy and nutritious food systems. Therefore, better understanding how different sets of governance factors interact to impact service provision has implications for tackling food safety hazards to consumers.

The following section discusses the four different mechanisms—information, authority, capacity, and incentives—through which governance impacts service provision and the implications for informal markets. Subsequently, we elaborate on the different ways in which markets are managed in Nigeria, including the areas of oversight by the LGAs. This is followed by a discussion of the data collected for the analysis and a review of several descriptive statistics. Our main analytical

discussion follows, showing how different governance metrics are associated with the provision of key market services essential to the livelihoods of traders and safety of food for consumers. The final section concludes.

2. Governance of Informal Markets

Governance and Service Provision

In this study we use the term informal markets to refer to settings where employment takes place in small-scale, unregistered enterprises, and employees lack legal and social protections (Chen, 2012). While these markets are typically well organized, labor relations largely rely on casual employment, personal, and/or social relations rather than contracts with formal guarantees (ILO, 1993). In Africa, informal food markets have also been referred to as traditional markets (Davies et al., 2022) and open-air markets (Hannah et al., 2022), while in Asia, they often are referred to as wet markets (Zhong et al., 2018).

Existing literature offers some important insights about the ways in which governance and service provision interact in informal market settings. For instance, there is a long tradition of research arguing that access to information improves decision making regarding the allocation and prioritization of services (Kosec & Wantchekon, 2020). There are many levers through which information asymmetries can be mitigated. For instance, budget transparency initiatives are based on the assumption that greater information about spending behavior encourages public feedback and pressure for expenditures more aligned with their preferences (Carlitz, 2013). Physical proximity is another modality of enhanced information gathering; indeed, one of the main motivations for decentralization is that it improves access to information for local authorities about service delivery needs and enables citizens to engage in greater monitoring of local service delivery providers (see Ahmad et al., 2006; Tiebout, 1956). Interest groups—such as employee and citizens' associations and unions—likewise are considered "transmission belts," acting as important agent of upwards information sharing by aggregating and conveying the main interests and preferences of their members to relevant decisionmakers (Flöthe, 2020).

Yet, information alone is not enough to generate a government response or improved service provision. Kosack and Fung (2014) note that information is only effective under two conditions: if service providers are sensitive to the user (i.e. the public's) actions and if they can respond constructively. Political incentives are one factor that might influence sensitivity to information, predominantly through electoral accountability. In other words, if leaders believe that they may be voted out of office due to poor service delivery performance, they might be more incentivized to enhance services for their constituents compared to leaders that will not be tested at the ballot box (Ashworth, 2012; Besley & Ghatak, 2007; Fearon, 1999; Ofosu, 2019; Warren, 2014). Electoral incentives though may interact closely with service characteristics. Some services are very visible, such as infrastructure provision, while others are less so, such as agriculture extension services or food safety training. Elected leaders may be more responsive to enhancing more visible services since those are the ones that constituents can more easily monitor (Batley, 2004; Batley & Mcloughlin, 2015).

Relatedly, the ability of leaders to respond constructively depends on who has the authority to provide services. Authority refers to either the functional or perceived mandate to exert control in a

particular service delivery or policy arena. Sometimes this authority is formally expressed through legal or constitutional provisions that indicate which agencies and levels of government are responsible for some services but not others. In other cases, authority may be derived from an informal set of norms and networks that accord legitimacy to certain entities to govern (Börzel & Risse, 2021).

Finally, authority is meaningless without a concurrent capacity to deliver. Typically, capacity is reflected in several dimensions. One includes sufficient human resources—both in terms of technical skills, and staffing numbers—to identify market needs, oversee service implementation, and evaluate outcomes. Another refers to sufficient financing to invest in services, including procuring relevant equipment, labor, and materials. Such financing may be from internally generated revenue, allocations from government, funding from donors, or private sector contributions. A third element of capacity is bureaucratic autonomy, or independence of the bureaucracy from political interference, which has been associated with better development outcomes in multiple settings (Cingolani et al., 2015; Oliveros & Schuster, 2018).

Implications for Traditional Markets

How do these governance mechanisms manifest in traditional markets? Markets in LMICs frequently are nested in multiple governance systems (Davies et al., 2022; Nkuku & Titeca, 2018). Market traders' activities typically are regulated by legislation enforced by national and local authorities and market leaders. Yet, traders are often simultaneously navigating complex relationships with a range of non-state actors, including traditional authorities, private sector service providers, commodity associations, and street vendors (Davies et al., 2022; Smit, 2016). Equally, they may be dealing with criminal actors trying to extort resources or steal inventory. In some settings, and especially around elections, party politics infiltrates markets and product associations, impacting stall allocations for traders and the range of fees they must pay (Siame et al., 2020). Therefore, the linkage between governance and service provision occurs through multiple possible channels.

Mandated authority for market management in LMICs typically falls to local government actors, such as districts, municipalities, or communes. Even formal governance via local government authorities can be very fragmented, with different departments responsible for collecting revenues, upgrading services, and providing food safety licenses (Resnick & Sivasubramanian, 2023). Moreover, market governance can vary substantially even within the same country or city. In Lusaka, Zambia, for example, there are council markets that are overseen by a Market Advisory Committee that consists of the local councilor, an appointed market master, a tax collector from the city council, a policy officer, and three elected vendors. These co-exist with cooperative markets overseen by independent market committees elected by vendors (Blekking et al., 2017). In the Democratic Republic of Congo, urban markets are *de-jure* under the mandate of the provincial governor and provincial assembly while municipal ones fall under the mayor, but some are *de-facto* controlled by presidentially-appointed market administrators (Nkuku & Titeca, 2018).

These variations in authority therefore result in different degrees of presence and engagement by local government officials, which can impact information flows. For example, in direct market management approaches, there is usually an on-site market administrator as well as fee collectors employed by the local government authority (Ayimpam, 2024; David et al., 2010). This daily presence of local government employees may improve information flows about insufficient

services in markets more effectively than in delegated market approaches where an independent entity or a local community oversees the market. In the latter case, where the local government does not have an office or representatives in the market, it may be less aware of service delivery shortfalls.

Product and market associations present important considerations for market management. On the one hand, market associations can be an important information conduit by conveying a diverse set of trader concerns to the relevant decisionmakers (Scheiterle & Birner, 2023). However, some product associations within markets can be particularly strong—either due to their size or their leadership—and thereby undermine the authority of leaders responsible for the entire market. In other cases, they may undermine the authority of even the *de-jure* local government actors by engaging in clientelistic relationships with politicians. For instance, they may lobby to avoid fee increases or collections during electoral periods or use partisan affiliations to gain selected access to trading spaces (Asante, 2022; Paller, 2019; Resnick, 2021b). In still other cases, more traders' associations may lead to collective action challenges by generating multiple sets of veto players in the market that undermine the authority of the official market leadership or reproduce power hierarchies that serve narrow interests (Meagher, 2010; Young, 2021).

Incentives for service provision may occur at multiple levels. One can be through whether market-level leadership committees are elected or appointed. Appointed market leaders are likely to be upwardly accountable to the entity that appointed them—whether a mayor, governor, president, or traditional authority (e.g. chief)—than downwardly accountable to the market traders. Another is at the local government level. Several studies suggest that appointed governments that *de-jure* oversee markets tend to be more focused on exploiting market resources than responding to traders' concerns and protests (Gumisiriza, 2021; Nkuku & Titeca, 2018).

Finally, capacity for service provision in informal markets is relatively low in LMICs in general and in Africa in particular. In markets in Zambia, political interference in the bureaucracy of local councils by party cadres undermined efficient market management and revenue collection (Siame et al., 2020). In general, local government revenue in Africa is minuscule (OECD and UCLG, 2022)—and tax revenues collected from markets are rarely earmarked for reinvestment in market infrastructure. Human resources are equally scarce. For instance, a study of 16 local governments in Africa revealed management staff ratios of 1.4 people per 1 000 inhabitants, compared with 36 per 1 000 inhabitants in high income countries (Cities Alliance, 2017).

3. Market Governance in Nigeria

We examine the role of information, authority, capacity, and incentives across wholesale markets in Nigeria. Based on the Nigerian Constitution, management and regulation of markets falls under the responsibility of the country's 774 LGAs (GoN, 1999). Most local governments have the same structure such that the LGA chairperson is directly elected by eligible voters in the LGA for a renewable three-year term, and s/he appoints commissioners to head local government departments. The legislative arm of the LGA is governed through a council whose members (i.e. councilors) are elected from single member wards (Barkan et al., 2002).

The two main sources of financing for the LGAs are own-sourced revenue and a share of the Federation Account, which includes all the revenue collected by the federal government and then

distributed according to a formula to the states and LGAs (USAID, 2010). One of the sources of own-source revenue is tax collection from the markets (Grossman, 2021). However, due to conflicts between LGAs and individual vendors, the latter typically pay via the market associations that oversee the markets (Adeosun et al., 2023).

LGAs are not always accountable to their constituents. First, in some cases, state governors remove elected LGA representatives and appoint LGAs caretaker committees that align with the governor's prerogatives and party. For instance, Page and Wando (2022) note that governors are more likely to appoint caretakers when they are concerned that an opposition party may gain too many LGA chairmanships. There are currently 21 states in Nigeria where the LGAs are under caretaker committees (Akasike and Tolu-Kolawole 2024). Kyburz (2017) found that elected rather than caretaker LGAs in Nigeria demonstrate a greater provision of public goods. Similarly, Bunte and Kim (2017) found that elected local politicians in Nigeria were more likely than appointed ones to make spending decisions that corresponded to local populations' demands .

Market leaders can play an important role in these dynamics. Most Nigerian markets have an executive committee led by a chairperson. There often is also a deputy chairperson, a treasurer, secretary, and possibly a public relations officer (Grossman, 2021). Sometimes these leaders are elected by their peers in the markets and sometimes they may be appointed by political elites or traditional authorities. In addition, the markets may include product associations, which oversee traders engaged in particular commodities.

The power of market leaders interacts with the broader political system in which they're embedded. According to Grossman (2021), when LGA chairpeople are elected, market leaders have a great deal of influence because they can mobilize traders to vote for a particular candidate or to protest—even shutting down markets—when they dislike the decisions of a chairperson. These actions can serve as an important source of information about whether traders are satisfied with their market environment. However, this is a less effective strategy for market leaders when LGA chairpeople are appointed, diminishing traders' ability to convey dissatisfaction with service provision.

In addition to these governance dynamics, other types of actors are prominent in Nigeria's markets. For instance, even though waste management is the constitutional responsibility of LGAs, they are rarely capacitated enough to do so. As such, there is often a combination of formal waste management authorities (provided by government or the market authority) that operate in parallel to informal waste disposal arrangements such as cart pushers known as *Kole-kole* or *barro' boys* (Nzeadibe & Ajaero, 2010). Likewise, community members or private sector providers may provide toilet facilities for a fee (Kosoko & Hassan, 2021) while informal vendors selling sachets, jerry cans and bottles of water have become a major source of water supply (Ajala et al., 2020).

Collectively, the impact of governance on service delivery has downstream impacts on many different outcomes, including food safety. Knowledge of food safety practices and enforcement of food safety regulation are not effective when there is a lack of critical infrastructure to make such activities realistic for market vendors (Hoffmann et al., 2019). A systematic review focusing on Nigeria found significant gaps in food safety practices, such as inadequate handwashing, unsanitary waste disposal, and a lack of running water and functional toilets at markets (Nordhagen, 2022). These findings are bolstered by several other studies in different LGAs across

the country that find insufficient market infrastructure is a major concern of Nigerian food vendors (Akpabio & Udofia, 2017; Imarhiagbe & Eghomwanre, 2023; Resnick et al., 2019).

4. Data Collection and Descriptive Statistics

To examine the impacts of governance on service provision in Nigeria's wholesale markets, a survey was implemented across the universe of 299 wholesale markets where fish, tomatoes, or green leafy vegetables (GLVs) are sold across seven Nigerian states (Borno, Cross River, Ebonyi, Kaduna, Kebbi, Oyo, Plateau) and Abuja, the Federal Capital Territory (FCT). The selected markets spanned 132 LGAs. The survey instrument was administered between July 2023 and February 2024 in a focus group format to market leaders and traders who are familiar with the market operations. Figure 1 highlights with red dots the locations of the wholesale markets.

In constituting the focus groups, particular emphasis was made to include female traders, youth and traders who had been operating in the market for a long period of time and who could provide a an authoritative assessment. The 7 states and Federal Capital territory (FCT) were selected to cover a range of socio-economic and agricultural diversity across Nigeria. They also encompassed political diversity since 97 LGAs were under caretaker administrations at the time of the survey collection (Akasike and Tolu-Kolawole 2024).

The questionnaire gathered comprehensive data on market-level characteristics, including available infrastructure such as functional taps and toilets, and the number of traders and businesses. It also collected information on market governance, such as who oversees daily operations, how they are selected, and the type of land ownership structure for the market. Importantly, and in contrast to much extant work on markets, the survey included both urban *and* rural markets. The survey revealed that in 266 of the markets, no traders were registered with the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN), which is the government agency whose mandate includes bringing SMEs into the tax and banking system. This suggests that a majority of the wholesale markets in our sample are truly "informal" based on the definition provided earlier.

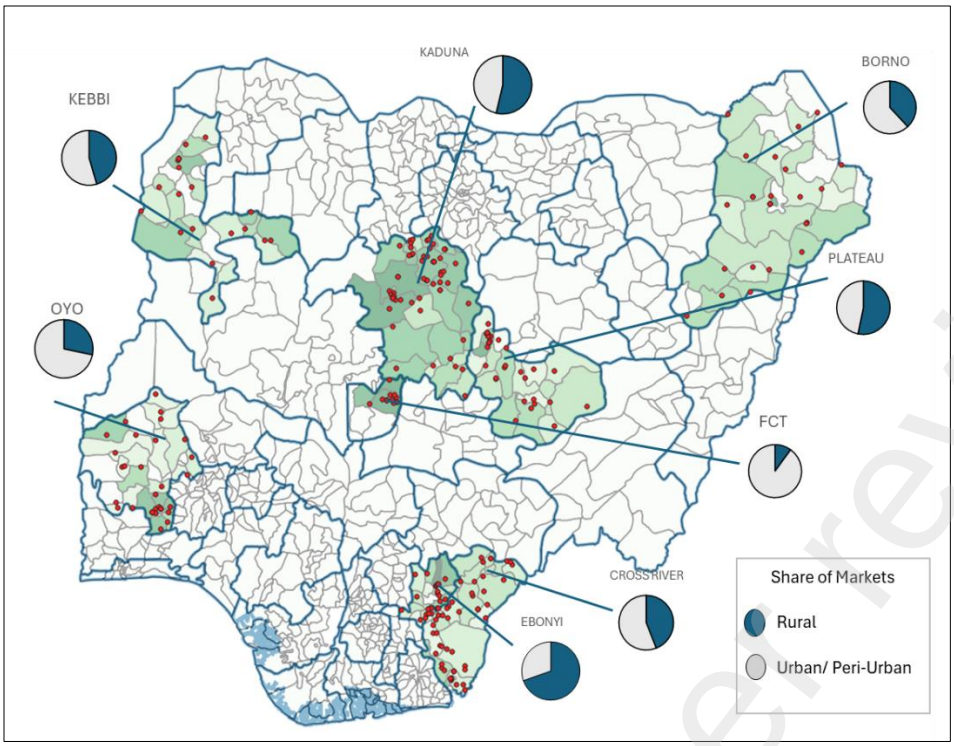

Figure 1: Sample Locations in Nigerian Survey
Notes: Green shading indicates LGAs where markets were sampled. Darker color LGAs indicate a higher population density. Red dots indicate the location of the wholesale markets.

Market services

To assess service provision in markets, we focused on five outcomes: 1) availability of a dependable source of water (piped water or boreholes), 2) access to functional toilets, 3) access to electricity from the grid, 4) security, and 5) waste collection.[1] Access to safe water is critical for handwashing and for cleaning products while the provision of functional toilets provides greater sanitation than alternative human waste disposal methods that can contaminate market soils and trading spaces. Security is key in traditional markets where many traders lack storage facilities and/or trade from stalls/spaces that cannot be locked. This need is heighted by Nigeria's insecurity due to violent shocks such as Boko Haram activity, banditry and farmer-herder conflicts. Electricity is pivotal for agro-processing and cold storage to ensure longevity for perishable vegetable and fish products.

Each of these service variables was coded as a binary dummy, and an equally weighted service index was constructed using these five services to rate markets on a scale from 0 to 5. In the empirical analysis, we look at these services separately and as part of the index, allowing us to identify the ways in which service characteristics may interact with governance structures. Table 1 below highlights the shares of markets with these services for the entire sample and within each study state.

[1] Some markets only operate a few times a week so waste collection was operationalized based on whether those services either occurred daily, on the market day, or just prior to the market day.

Five points stand out. First, waste collection and electricity access are the services that are the least present in the markets; both are available in less than 30 percent of the overall sample. Second, both the share of markets that had access to water from pipes or a borehole, as well as those with electricity from the grid, rose over the last five years. Yet, this again obscures larger improvements in some states but not in others. Third, while approximately 43 percent of markets have functional toilets, this needs to be contextualized based on the market size. In some markets, there are more than 10,000 traders and therefore, the presence of a dozen toilets is woefully insufficient, even before considering the number of customers that frequent these markets each day. Fourth, markets in the FCT, which are also the largest and the youngest, generally have the best access to all services on average. Fifth, the presence of security guards is the most common service and provided by about 68 percent of the study markets.

Table 1: Descriptive statistics of market characteristics by state

Average	*Overall*	*Borno*	*Cross River*	*Ebonyi*	*FCT*	*Kaduna*	*Kebbi*	*Oyo*	*Plateau*
Waste removed daily (%)	26	33	24	9	70	38	9	30	9
Access to electricity grid (%)	28	14	20	48	60	25	23	48	15
Access to electricity grid, 5 years ago (%)	22	14	8	41	60	24	24	32	11
Access to pipe-borne/ borehole water (%)	40	24	36	61	80	33	27	72	23
Access to pipe-borne/ borehole water, 5 years ago (%)	30	10	31	55	80	18	27	48	22
Access to functional toilets (%)	43	95	30	26	100	38	68	52	19
Security guards (%)	68	86	52	91	60	61	86	72	66
Service delivery index (0-5)	2.06	2.52	1.62	2.35	3.7	1.94	2.14	2.74	1.32
Market size (number of traders)	1897	829	2803	2612	4420	1329	684	2010	1956
Market age (number of years)	48.3	44.2	45.2	62.2	31.8	41.2	59.7	55.9	49.5
Markets clean daily (%)	36	38	32	26	100	45	14	52	11
Support during shocks (%)	74	90	44	78	90	75	91	83	77
Number of Markets (n)	299	21	50	23	10	80	22	46	47

Based on the service delivery index, which ranges from 0 to 5, Figure 2 further illustrates the vast disparity in service delivery across the 299 markets, ranging from the availability of all services in a market like Nwelem (Ebonyi State) and Odo Oba (Oyo State) to no services in places like Liman Ibada (Kaduna State) and Dunkus Market (Plateau State).

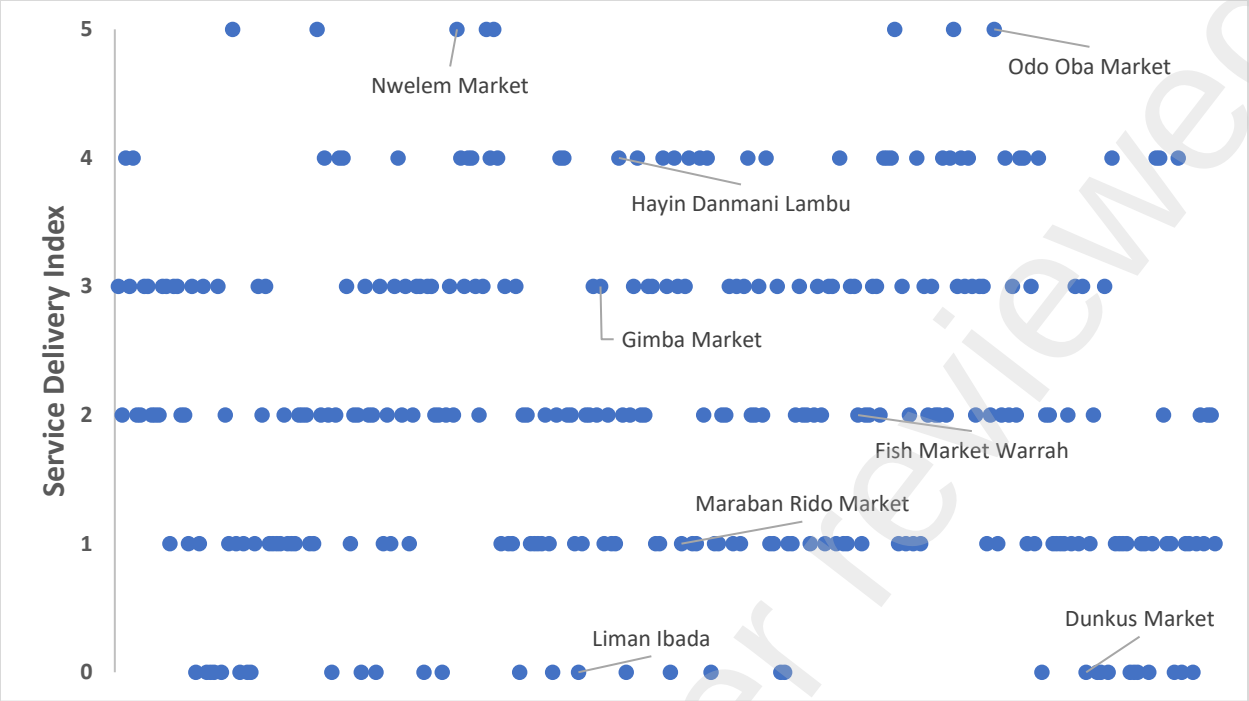

Figure 2: Variation in Service Delivery Index across Markets

Importantly, markets exert different levels of responsibility over these services. As seen in Figure 3, the markets have a low level of recordkeeping for these services overall, but among those that they do record, security and waste collection receive greater attention than electricity and water. Moreover, Table 2, delineates which entity is responsible for a particular service in the market when it is indeed available. In addition to water, the government is primarily responsible for toilet construction, followed by private enterprises. By contrast, the responsibility for assigning security guards in the market is largely borne by the market authority. Waste collection is the most diffuse responsibility, with several actors playing a relatively equal role and individual traders left to handle much of their own collection.

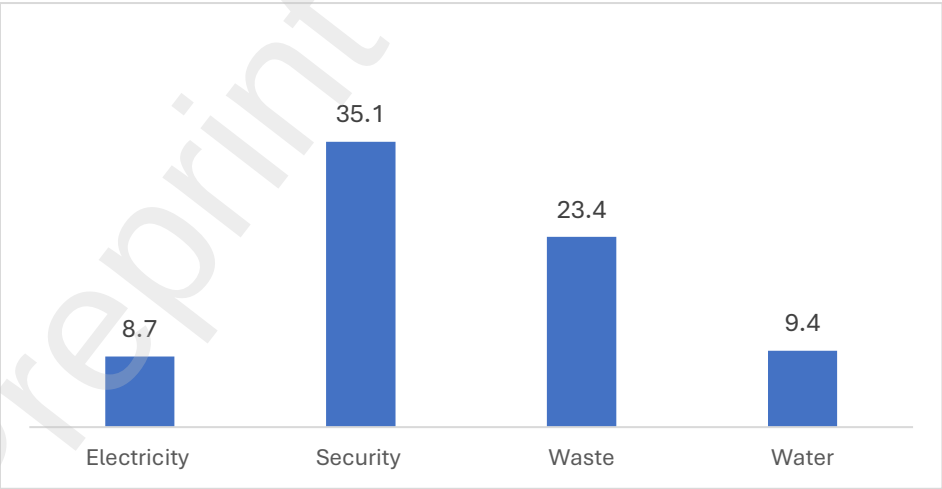

Figure 3: Share of markets that keep records for key services (%)

Table 2: Share of responsibility for key market services (if they are present in the market), %

Responsibility of...	Responsibility for...			
	Waste collection	*Toilet construction*	*Pipe-borne or borehole water*	*Security guards*
Government	12.8	41.9	57	6.2
Private enterprise/individuals	24.4	29.5	9.1	---
Market authority	18	14	19	76.5
Product association	3.9	---	---	---
NGO/Donor	---	10.1	14	---
Host community	---	---	0.8	12.4
Individual traders	41	---	---	---
Other	---	4.7	---	4.9
Total	*100*	*100*	*100*	*100*

Notes: Electricity is excluded since we assess whether markets were connected to the grid, which technically can only be managed by a government entity.

4. Empirical Approach

To better understand the disparity in service provision captured in Figure 2, this section examines the four governance mechanisms discussed earlier in more detail. Out of 299 markets, 262 reported that a market authority or association manages their daily operations. As noted earlier, the leadership of these entities typically consists of a chairperson, vice chair, secretary (different for different products traded in some cases), financial secretary, and treasurer. Overall, the average market has 4.5 leaders across these different positions. On average, 16% of market leaders are female, with Cross River and Oyo having at least a quarter of their leadership composed of women. However, only 7% of the chairpeople across all states are women (see Table 3).

We consider several proxies to operationalize the governance dimensions discussed earlier. To capture the role of information in service delivery, we include three metrics. The first is whether there is an LGA office located in the market, which might improve oversight by local authorities of service delivery challenges that need to be addressed. LGAs have their offices in around 37 percent of the markets. The second metric for information is whether there are product associations in the market because they theoretically can aggregate and communicate their members' concerns. The third is whether at least one forum in the market exists that regularly meets to allow traders to convey their concerns to the market authority.[2]

To approximate for authority, we again consider the presence of product associations because more associations suggest multiple constellations of power in the market that may dilute the authority of the overall market leadership committee. Specifically, we examine whether there is just one market authority that oversees the entire market or whether there are also additional

[2] Some markets have multiple forums for each of the main products sold, i.e. tomatoes, green leafy vegetables, and fish.

produce associations for tomato, green leafy vegetables, and fish in parts of the market. On average, 65% of markets have these associations. In addition, we also operationalize authority based on whether a market is situated on land primarily owned by the government since land ownership dictates who has a right to invest in certain services. As seen in Table 3, 51 percent of markets are located on majority government owned land rather than community or private land. [3]

To assess incentives, we consider the role of electoral factors in two ways. The first is whether the market chairperson is chosen through direct elections by traders or appointed by various groups, including traders, management, traditional leaders, political appointments, or via a voluntary (non-competitive) basis. On average, 37 percent of market chairpeople are elected. The second proxy for incentives is whether the market is located in an LGA that is under the control of a caretaker government. As noted earlier, such governments tend to be less invested in service provision (Kyburz, 2017), even if their representatives are present in market offices. These caretaker governments are in Cross River and Plateau states and encompass 97 markets in our sample.

Finally, for capacity, we consider whether the market pays taxes to the LGA. Our assumption is that tax payments provide resources for investing in market services by the LGA. Data limitations about LGA budgets, expenditures on markets, and human resources hinders looking at additional dimensions of capacity. Notably, no markets pay this tax in FCT, as it goes to the Abuja Market Authority instead. Another metric of capacity is whether the market chairperson has some secondary or tertiary education, with the assumption that more education ensures greater familiarity with resource management and skills to negotiate with politicians and service providers (Grossman, 2021). Overall, market chair people in Cross River, FCT, and Plateau demonstrate the highest average levels of education.

Table 3: Dimensions of Market Governance by State

Averages	*Overall*	*Borno*	*Cross River*	*Ebonyi*	*FCT*	*Kaduna*	*Kebbi*	*Oyo*	*Plateau*
Number of leaders (n)*	4.52	4.14	3.6	4.9	5	3.47	3.91	5.13	6.83
Share female leaders (%)	16	7	37	18	22	5	1	28	13
Share of female chairpeople (%)	7	0	27	5	0	0	0	11	1
Share of markets with elected chair people (%)	37	67	25	55	70	28	18	11	70
Share of elected leaders (%)	39	67	31	56	68	28	19	9	79
Market authority pays fees to LGA (%)	36	14	80	52	0	29	9	24	34

[3] Primary land ownership defined as more than 50% of land owned by that entity. We find that 43% of the markets on government land do not have an LGA office. In other words, the presence of an LGA office is not necessarily correlated with land ownership.

Chairperson has secondary or tertiary education (%)	64	43	94	70	80	53	50	46	77
LGA has office in market (%)	38	19	56	48	80	31	36	24	36
Majority of land is government-owned (%)	51	71	40	9	90	58	96	20	62
Share with product associations (%)	65	71	56	74	90	63	95	43	74
Share of markets with forum for traders' complaints (%)	63	48	38	48	90	66	55	93	68
Number of Markets (N)	299	21	50	23	10	80	22	46	47

* Data on market leaders is available for 293/299 markets.

In addition to the independent variables aimed at capturing governance dynamics, we include several sets of controls. These include whether the market is in a rural versus non rural (urban or peri-urban) location, assuming that rural areas are likely to be less endowed with resources for reinvestment in market infrastructure and services. For similar reasons, we include whether the market is located in the North or the South of the country as a proxy for economic development since Northern states are, on average, poorer and therefore likely to have fewer resources to invest in services. Another control includes the log of market size to account for the number of traders in the market, assuming that larger markets require more services.

5. Findings

Table 4 presents the marginal effects of the probit model results for each of the five individual services while Table 5 presents the marginal effects of the ordinal probit for the overall service index. The findings highlight that the mode of governance that matters varies across the service of interest.

Table 4: Marginal Effects of Governance and Service Provision, Probit Estimation

Independent Variable	(1) Waste collection	(2) Electricity	(3) Water access	(4) Security guards	(5) Functional toilets
LGA office in market	0.023	0.098	0.068	0.027	0.014
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Forums for complaints	0.063	-0.011	-0.055	0.120*	0.062
	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
Producer associations in market	-0.229***	-0.052	-0.081	0.011	0.064
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Majority government land	0.086	-0.014	0.082	-0.018	0.129*
	(0.06)	(0.06)	(0.06)	(0.06)	(0.06)
Chairperson elected	0.141**	-0.007	-0.026	0.144**	0.015
	(0.05)	(0.05)	(0.06)	(0.05)	(0.05)
LGA caretaker government	-0.146*	-0.268***	-0.362***	-0.201*	-0.289***
	(0.06)	(0.05)	(0.05)	(0.08)	(0.07)
Fees paid to LGA	0.018	0.041	0.026	0.015	0.010
	(0.06)	(0.05)	(0.06)	(0.06)	(0.05)
Chairperson educated	-0.008	0.068	-0.011	0.116	0.071
	(0.06)	(0.05)	(0.06)	(0.06)	(0.06)
Log market size	0.026	0.040*	0.020	0.020	0.038
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
Rural market	-0.010	-0.233***	-0.089	-0.055	-0.307***
	(0.05)	(0.05)	(0.06)	(0.06)	(0.06)
Northern state	0.062	-0.126*	-0.354***	-0.003	0.041
	(0.07)	(0.06)	(0.06)	(0.08)	(0.07)
N	291	291	291	291	291

Standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

Table 5: Marginal Effects of Governance and Service Delivery Index, Ordinal Probit Estimation

Independent Variable	(1) No services	(2) One service	(3) Two services	(4) Three services	(5) Four services	(6) All services
	-0.035	-0.038	0.000	0.026	0.034	0.013
LGA office in market	(0.02)	(0.02)	(0.00)	(0.02)	(0.02)	(0.01)
Forums for complaints	-0.029	-0.029	0.002	0.021	0.025	0.009
	(0.02)	(0.02)	(0.00)	(0.02)	(0.02)	(0.01)
Producer associations in market	0.041*	0.042*	0.000	-0.028*	-0.039	-0.016
	(0.02)	(0.02)	(0.00)	(0.01)	(0.02)	(0.01)
Majority government land	-0.041	-0.041	0.002	0.029	0.037	0.014
	(0.02)	(0.02)	(0.00)	(0.02)	(0.02)	(0.01)
Chairperson elected	-0.040*	-0.042*	-0.000	0.029*	0.039*	0.015
	(0.02)	(0.02)	(0.00)	(0.01)	(0.02)	(0.01)
LGA caretaker government	0.256***	0.174***	-0.053**	-0.163***	-0.165***	-0.049**
	(0.04)	(0.03)	(0.02)	(0.02)	(0.03)	(0.02)
Fees paid to LGA	-0.014	-0.014	0.000	0.010	0.013	0.005
	(0.02)	(0.02)	(0.00)	(0.01)	(0.02)	(0.01)
Chairperson educated	-0.031	-0.029	0.002	0.021	0.027	0.010
	(0.02)	(0.02)	(0.00)	(0.02)	(0.02)	(0.01)
Log market size	-0.021**	-0.021**	0.001	0.015**	0.019**	0.007*
	(0.01)	(0.01)	(0.00)	(0.01)	(0.01)	(0.00)
Rural market	0.099***	0.114***	-0.007	-0.084***	-0.094***	-0.028**
	(0.02)	(0.03)	(0.01)	(0.02)	(0.02)	(0.01)
Northern state	0.071*	0.063**	-0.002	-0.046**	-0.062*	-0.024*
	(0.03)	(0.02)	(0.00)	(0.02)	(0.03)	(0.01)
N	291	291	291	291	291	291

Standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.00

Of the four mechanisms discussed earlier, incentives via accountability play a strong role in our analysis. Having an elected charperson, rather than one with an appointed chairperson or run by volunteers, is associated with a 14 percent point increase in the probability of having daily waste collection and security. As highlighted in Table 2, this is likely because a plurality of respondents claimed that waste collection either was the responsibility of the market authority or of the individual traders. Consequently, if the chairperson is concerned with re-election and retaining credibility with the market traders, then s/he has an incentive to ensure this responsibility is upheld or that the traders themselves remove their waste. Similarly, security is, by far, viewed as the largest responsibility held by the market authorities (see Table 2).

The importance of accountability is further affirmed by the significant and consistently negative impact of LGA caretaker governments. Almost across the board, service provision is worse in markets where the LGA is under a caretaker government, although the substantive size of these impacts are greater for the utilities and toilets. A caretaker government is associated with a 27 percentage point higher probability of no electricity access, a 36 percentage point higher probability of no water, and a 29 percent higher probably of no functional toilets. These findings may reflect that in such contexts, there is little incentive for the LGA to respond to market needs and also, as argued by Kyburz (2017) and Page and Wando (2022), such settings are more vulnerable to extortion of LGA revenue by the state. Markets are likely to suffer the most since that is the main functional mandate of the LGAs. Moreover, given that market traders are an important source of vote banks for local government elections (Grossman, 2021), using their numerical weight to push for favored tax rates and services, the absence of electoral accountability in caretaker LGAs reduces their ability to lobby for improved services and reduces the incentives of LGA politicians to learn about traders' needs.

Producer associations for particular commodities is negatively associated with the provision of many of the services, significantly so for daily waste collection. Although this relationship is deserving of greater research, one reasons for this outcome is because the presence of more producer associations implies more decentralized authority, resulting in the market leadership exerting less control over how and who traders hire, if anyone, to dispose of their waste. For instance, in most markets with product associations, the analysis identified that the entity responsible for waste disposal is listed as a private service provider or the individual traders themselves (see Table 2). In such settings, waste removal would be more episodic rather than on a daily basis, due to the time availability of traders to remove the waste and the frequency of their ability to hire informal waste removers. Indeed, in markets with product associations, a majority have their waste collected on a weekly basis (55%) than a daily one (22%) while those without associations are more likely to collect on a daily basis (40%) versus a weekly one (35%).

Government authority, captured by the presence of a market on land that is majority or entirely owned by the government, plays an important role with respect to the presence of functional toilets in the markets. Of the 129 markets that have a functional toilet, approximately half of respondents noted that the government was responsible for building them, followed by the private sector/individual investor, and then the market authority (see Table 2). As found in other parts of the world (Jain et al., 2016), these non-government actors may be wary of building toilets on land

that is not publicly owned since the investment may not be protected and the land may actually have been illegally acquired.[4]

With respect to the information mechanism, the potential proximity of the LGA having an office in the market does not have a notable relationship with any of the service delivery outcomes. However, the presence of at least one traders' forum for complaints is associated with the presence of security guards in the market. Again, since this is the service that the market authorities have the most control over, this is consistent with the idea that forums for complaints provide the opportunity to share concerns about security with the market authority and for the latter to have the mandate to address such complaints accordingly.

Besides the presence of an LGA caretaker government, none of the other governance variables appears to affect the provision of larger scale infrastructure, such as electricity and water. The electricity grid is managed by the Transmission Company of Nigeria (TCN) with 11 distribution companies delivering to users (Edomah et al., 2021) and therefore, neither the LGA nor the market authorities could easily extend their electricity connections autonomously. Similarly, insufficient water access is a more structural challenge in Nigeria. As of 2018, approximately 47 million Nigerian lacked improved drinking water and 150 million did not have access to a basic handwashing facility. These figures are worse in rural areas (World Bank, 2019). Water management is generally overseen by the State Water Agencies (SWAs), which were established in 1997. In addition, each state can decide on the institutional arrangement for delivering services, and governors often have a great deal of autonomy in choosing the contractors for water projects, which often leads to corruption (World Bank, 2017). Consequently, like electricity, water is not a service over which the market authorities exert much influence.

We also find that whether the market authority pays fees to the LGA does not appear to influence service provision. This perhaps reflects perceptions that there is little transparency in how the money is used and resonates with findings in other informal market contexts that tax payments often are not perceived by market traders to provide any substantive benefit (Resnick & Sivasubramanian, 2023). Finally, separate from our four governance mechanisms, we find that rural and northern markets are significantly associated with fewer services, specifically water, electricity, and toilets.

The ordinal probit findings in Table 5 further underscore that several of the governance variables remain significantly associated with the number of services that a market contains. Namely, producer associations are associated with having no or just one service. By contrast, elected chairpeople tend to be more associated with having a higher number of services, particular three or four. Again, the LGA caretaker government is consistently significant across the index in the expected directions, demonstrating a positive relationship with the probability of no or one service and a negative relationship with having three or more services. Figure 4 clearly highlights how the presence of an LGA caretaker government is negative related to the probability of moving up each unit on the service delivery index. The controls play a significant role in the expected directions

[4] Similarly, in East Africa, private service providers need to have a legal land certificate of ownership before toilet construction (O'Keefe et al., 2015).

along the index, with Northern and rural markes less likely to have higher numbers of services and larger markets more likely to do so.

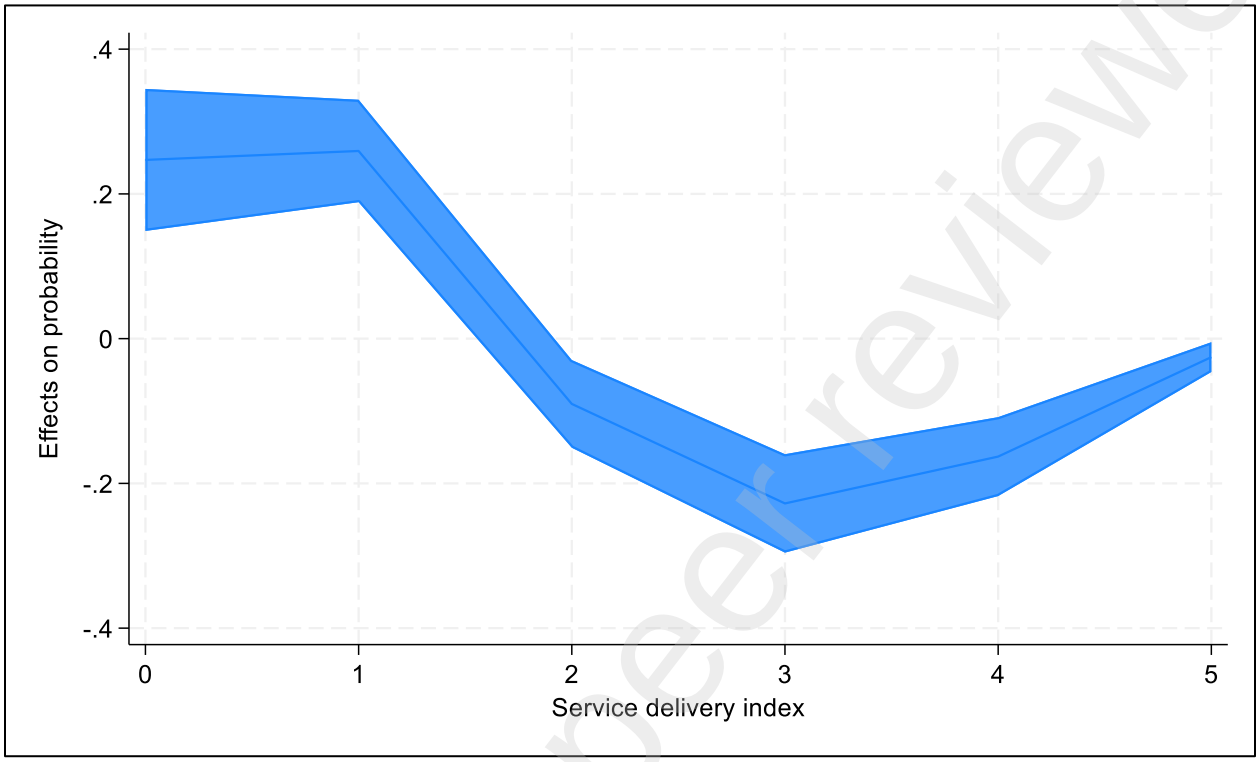

Figure 4: Conditional Marginal Effects on Service Delivery Index from LGA Caretaker Government
Notes: Results hold all other variables at their means. Shading represents the 95 percent confidence interval.

6. Additional Considerations

As a test of our results, we further consider the logical implications of the analysis thus far. Specifically, the probit analyses highlight four key results: 1) that the presence or absence of key utilities are not influenced by market-level governance factors, 2) an elected chairperson is most important for services over which the market has significant, or even exclusive, authority, 3) producer associations exert negative impacts on metrics related to cleanliness (i.e. waste collection), and 4) LGA caretaker governments are a substantively and statistically significant hindrance to improved service provision.

Consequently, we focus on two additional outcomes to identify whether similar patterns emerge to gain confidence in our original analyses. The first is whether markets are cleaned daily. This refers to whether the marketeers are collecting trash and sweeping their immediate vacinity at the end of the trading day. On average, only 36 percent of markets do this (see Table 1). The second is whether the market has a way of organizing traders to support one another in the event of a shock, such as a death or illness. Such a function remains critically important in these informal settings where a

social safety net is missing.[5] Like the provision of security, providing support to traders is a responsibility over which the market theoretically exerts a lot of authority.

Table 6 reports the probit results and affirms many of the same dynamics uncovered in Table 4. Namely, as with waste collection, product associations have a negative association with daily market cleaning. As with security, both the existence of forums for complaints and an elected chairperson are positively associated with whether the market authority can provide support during shocks. Thus, an information mechanism to convey that a trader has experienced a shock and a chariperson who has an incentive not to appear as uncaring both play an important role for this outcome. Consistent with all the other results, being located in an LGA with a caretaker government continues to exert a negative impact.

Table 6: Marginal effects on additional market services

Independent variable	(1) Market cleaned daily	(2) Market authority provides support during shocks
LGA office in market	0.070 (0.06)	0.027 (0.06)
Forums for complaints	0.006 (0.06)	0.127* (0.05)
Producer associations in market	-0.233*** (0.06)	0.071 (0.06)
Majority government land	0.047 (0.06)	-0.009 (0.05)
Chairperson elected	0.088 (0.06)	0.164*** (0.05)
LGA caretaker government	-0.281*** (0.06)	-0.172* (0.08)
Fees paid to LGA	0.003 (0.06)	-0.109 (0.06)
Chairperson educated	0.018 (0.06)	0.010 (0.06)
Log market size	0.003 (0.02)	-0.005 (0.02)
Rural market	-0.167** (0.06)	-0.051 (0.05)
Northern state	-0.072 (0.07)	-0.008 (0.07)

[5] Indeed, 82 percent of the markets noted that there was no type of government support for traders so such cooperative efforts by the market authorities can be quite important.

N	291	291

Standard errors in parentheses; * p<0.05, ** p<0.01, *** p<0.001

7. Discussion and Conclusions

Drawing on a unique survey of all tomato, GLV, and fish wholesale markets across 7 states and the FCT in Nigeria, this paper offers one of the only known contributions examining how different governance structures within markets may be associated with services key to food safety and traders' welfare more broadly. Overall, the results suggest a complex interaction between different modalities of governance and the characteristics of service provision. For services over which market authorities exert less immediate oversight, such as electricity and water, political incentives via an elected LGA is the main governance factor driving delivery in the wholesale markets. However, for services where markets may have access to a variety of service providers, including for collecting waste, hiring security guards, and providing toilets, other facets of governance can be quite important. Markets on government land are more likely to have functional toilets than those owned by communities or private actors, reflecting that it is the government that most often constructs toilets. Markets with elected chairpeople are more likely to collect waste on a regular basis and hire security guards. Product associations tend to play a somewhat negative role with respect to service provision, signficantly so with respect to waste collection and daily market cleaning.

At least two caveats are important for this paper. First, the capacities of the LGA and the market authority should theoretically make a difference to service provision but were relatively weak in this analysis. Future work could further test this finding by using more robust LGA-level metrics of financial and human capacity for Nigeria as they become available.[6] Second, qualitative evidence from more in-depth discussions with traders, market leadership, and LGA authorities from sample sites with diverse service delivery outcomes would help to better probe some of the mechanisms uncovered in this paper.

Notwithstanding these limitations, the paper highlights that in nested governance settings, like wholesale markets in LMICs, the mechanisms that might impact how governance affects service provision need to be conditioned on how much control different actors possess to influence the designated service. In other words, the difference between having an elected or appointed chairperson is most relevant vis-à-vis those services for which traders will hold a chairperson accountable and, in turn, will increase the chairperson's incentives to deliver.

The implications of these findings mean that efforts to improve service delivery in informal markets require a multi-faceted approach that recognizes the unique role played by different actors in terms of both the service delivery space where they exert the most control and the governance functions they are most likely to support (or undermine). Bolstering the capacities of product associations is likely critical for their ability to teach their members new skills and provide members with price information. Yet, they may not be the best partner for addressing the sanitation and cleanliness of markets if this can be managed more centrally by the main market authority. Similarly, encouraging market traders to elect their leaders rather than accepting political or community appointments can create a higher sense of political incentives to ensure delivery in key

[6] LGA audit statements that provide budget information could be valuable proxies for financial capacity, but this data was not available for all LGAs included in our sample.

areas. The location of markets on government land is particularly meaningful for services, such as toilets, that have high sunk costs and which generate few returns, making them unaffordable for market authorities and unattractive to private investors.

The broader setting is equally important: appointed LGAs concerned only with upwards accountability to state-level, party leaders than downwards accountability to local communities will be less responsive for the services they are directly responsible for and which require more infrastructure outlays, including electricity, water, and toilets. Equally, however, their approval of waste contractors may be motivated more by political than efficiency concerns or follow repressive practices towards informal waste collectors (Oguntoyinbo, 2012). As Nigeria's Supreme Court moves towards eliminating caretaker governments by preventing the disbursement of funds from the Federation Account to unelected LGAs (Itodo, 2024), the findings from this paper offer yet another example of how the caretaker system is detrimental to broader welfare.

Globally, well-serviced wholesale and retail markets are fundamental to the access of communities to healthy, nutritious foods. This is especially so in LMICs where traditional markets are often the only affordable outlet for nutritious food for the poorest consumers. Although focused explicitly on fresh vegetable and fish at the wholesale market level, the findings here have wider implications: to improve food safety and traders' welfare, it is important to jointly have stakeholders involved in informal markets who hold not only the authority to deliver a diverse set of services but also the political incentives to do so.

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