



Intrahousehold Preferences for Humanitarian Assistance—Who Prefers What

Evidence from Internally Displaced Households in Sudan

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ABSTRACT

Understanding the preferences of beneficiaries for what form of humanitarian aid they receive is critical for improving the effectiveness of such aid in conflict-affected settings that are characterized by rapidly changing markets and information asymmetries. This paper examines intrahousehold differences in preferences for in-kind, cash, and hybrid assistance among internally displaced households in Sudan, with particular attention to gender, decision-making power, and agency differences. While cash remains the most preferred modality, about half of the respondents reported favoring in-kind or hybrid assistance options. On average, women report a 7-percentage point higher preference for in-kind transfers than men, but with some variation across states. Preferences are strongly shaped by intrahousehold decision-making—spouses, particularly women, who control decisions over the use of aid are more likely to prefer cash, while those with less agency in such decisions favor in-kind assistance. We also find suggestive evidence that limited market access and self-control constraints are associated with a higher preference for in-kind transfers. These findings highlight the importance of agency and intrahousehold dynamics in shaping aid modality preferences and offer practical insights for designing more equitable humanitarian and social protection interventions in contexts with significant population displacement.

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1. INTRODUCTION

Social and humanitarian assistance programs are increasingly being used to address poverty and cushion the adverse effects of shocks, including those triggered by armed conflicts and natural disasters. Social safety net programs of various types and forms now reach about 4.7 billion people in low-and middle-income countries—three out of four people in these countries live in households that either benefit from or have access to social protection (World Bank 2025). Such programs were widely deployed in response to the COVID-19 pandemic (Gentilini et al. 2020; Abay et al. 2023a). The recent surge in armed conflicts has increased humanitarian needs (OCHA 2023). Globally, in 2025, 305 million people were estimated to need urgent humanitarian assistance, and about 190 million were targeted to receive it (GHO 2025). The surge in humanitarian needs is increasing the use of cash-based and in-kind forms of assistance as key humanitarian instruments to address hunger and malnutrition (Jeong and Trako 2022; GHO 2025). Parallel to increasing humanitarian needs, humanitarian organizations are witnessing a growing funding gap because of donor funding cuts (OCHA 2023; Kohnert 2025).¹ These dual challenges are forcing humanitarian organizations to revisit their delivery and targeting modalities to improve the effectiveness and cost-efficacy of the humanitarian services they seek to provide conflict-affected populations, in particular. Information on the relative efficacy of the various modalities through which social and humanitarian assistance can be delivered to households in conflict-affected communities is critical to designing and implementing effective programs.

Conflict-affected communities face market uncertainties and failures, which can make some aid delivery mechanisms less impactful and prohibitively costly than others. For example, aid deliveries during active conflict are prone to diversion and politicization, which can fuel further polarization and deterioration in social cohesion (Lischer 2003; Thomas and De Waal 2022; Shimada 2025; Kosec and Mo 2025). While empirical evidence from stable contexts provides some guidance on households' preference for different delivery modalities, particularly cash payments, in-kind goods, or vouchers (e.g., Currie and Gahvari 2008; Cunha 2014; Hidrobo et al. 2014; Gentilini 2016; Aker 2017; Hoddinott et al. 2018; Schwab 2020; Hirvonen and Hoddinott 2021; Berkouwer et al. 2021; Abay et al. 2023b; Gadenne et al. 2024), evidence on what forms of humanitarian assistance households in conflict-affected settings may prefer and effectively benefit from most remains missing. Similarly, how market failures, infrastructural damage, and associated uncertainty in conflict-affected settings shape preferences for and the effectiveness of alternative modalities of delivering humanitarian assistance remains underexplored. Beyond the infrastructural and market failures, saving or storing aid in conflict-affected settings introduces its own risk and threats (e.g., Abay et al. forthcoming). Finally, preferences for a particular modality of aid as well as the effectiveness of the different types of social and humanitarian assistance are likely to vary across different population groups, host communities, refugees, and internally displaced persons.

Intuitively, preferences for specific modalities of humanitarian assistance can also vary within the same household—women and men may have different priorities and vary in their preferences for in-kind assistance or cash transfers, depending on various underlying factors. Spouses may have varying preferences depending on their respective decision-

¹ For example, the global humanitarian funding gap was estimated to be USD 41 billion in 2023 (UN OCHA, 2023). The sharp cuts to foreign aid in 2025 by the United States, the world's largest humanitarian aid provider, have further increased this gap.

making roles and level of agency in the household. Understanding potential beneficiaries' preferences across the alternative modalities of delivering humanitarian assistance is crucial for improving the effectiveness of those services, especially in conflict-affected settings where humanitarian actors have asymmetric information on dynamically evolving markets and environments. In these contexts, beneficiaries are likely to have private information that shapes their preference for a specific modality of humanitarian aid. These preferences can ultimately shape the effectiveness of the humanitarian services provided.

By analyzing data obtained through a survey of internally displaced households in three states in Sudan, this paper seeks to fill in some of the knowledge gaps on what types of assistance those in need prefer. The ongoing armed conflict between the Sudanese Armed Forces (SAF) and the Rapid Support Forces (RSF), which began in April 2023, led to over 30 million of the 47.5 million Sudanese requiring humanitarian assistance by early 2025 (Humanitarian Action 2025a). Within this context, we elicited potential beneficiaries' preference for in-kind aid versus cash-in-hand versus digital cash transfers. In order to explore intrahousehold differences by gender, we elicit from each spouse in the household their specific preferences for the type of aid transfer they receive. We focus on three states that have experienced an influx of internally displaced persons (IDPs) because of the ongoing conflict: Kassala, Gedaref, and Blue Nile, all located in eastern Sudan along the borders with Ethiopia and Eritrea.

The context of Sudan and the focus on the preferences of internally displaced households across the aid transfer modalities offer a valuable opportunity for shedding light on an otherwise understudied population in need of assistance. Similarly, our focus on intrahousehold gender differences provides a unique contribution to the debate on the preference, feasibility, and effectiveness of different aid transfer modalities. Beyond examining intrahousehold differences in preferences for different modalities, we also explore and explain those choices using empirical data that characterizes households, markets, and characteristics of the local context. Specifically, we study whether intrahousehold differences in decision-making roles and agency explain intrahousehold differences in modality preferences. Further, we explore whether access to financial and savings instruments and markets shapes preferences for the modality of aid transfer, and whether these factors will have varying implications for women and men in the same household.

We find significant intrahousehold differences in aid modality preferences across spouses in the same household. While cash transfers are generally preferred more than in-kind, with about half of our respondents preferring cash at hand, the other half of the sample prefers in-kind or a combination of cash and in-kind transfers. Interestingly, wives report a relatively higher preference (7 percentage points) for in-kind transfers than husbands. We also find substantial heterogeneity in such intrahousehold differences across states: the intrahousehold differences appear to be stronger in more patrilocal states such as Gedaref. We also find intuitive explanations associated with agency in decision making within the household, access to financial instruments and markets, and related infrastructure. Most importantly, we find that the level of spousal agency and control over important decisions related to who uses the humanitarian aid and how it is used affects the modality of preference. Those spouses who are in control of key decisions related to what to do with humanitarian aid are more likely to prefer cash transfers, while those who are not in charge prefer in-kind transfers over cash. For example, if the husband is solely responsible for decisions related to humanitarian aid, the wife is 16 percentage points less likely to prefer

cash compared to when a wife has some responsibility for decisions associated with the use of the humanitarian aid. Finally, we find suggestive evidence that respondents who lack access to markets, have poor self-control, or have no associated commitment devices to save cash transfers are more likely to prefer in-kind transfers. Wives are more sensitive to poor access to markets than their husbands, and are more likely to prefer receiving in-kind assistance in such contexts.

Our study offers two important contributions to the literature on the choice of modality of social and humanitarian assistance. First, considering an understudied population and context, the paper contributes to the literature documenting and explaining modality preferences among internally displaced households in Sudan (e.g., Hirvonen and Hoddinott 2021; Berkouwer et al. 2021; Abay et al. 2023b; Gadenne et al. 2024). Exploring the modality preferences of this population provides a unique contribution to the literature. Second, our paper sheds new light on intrahousehold differences in preferences for the modality of aid transfers, an understudied issue in the literature. Despite the growing recognition of intrahousehold differences for various technologies (e.g., Miller and Mobarak 2013; Gulati et al. 2024; Gartaula et al. 2024) and public policies (e.g., Delaney and O'Toole 2008; Munro 2018), intrahousehold preferences for social assistance remain understudied, especially in the context of fragile and conflict-affected settings and populations.

The remainder of this paper is organized as follows: Section 2 reviews the theoretical and empirical literature on the choice of modality for delivering humanitarian assistance. Section 3 presents the context for the study and the data used, while Section 4 provides an empirical explanation for households' preference for the modality of delivering humanitarian aid. Finally, Section 5 concludes by highlighting relevant policy and programmatic implications of the analytical results.

2. LITERATURE REVIEW AND CONTEXT

2.1 Explaining modality choice in delivering social assistance

The theoretical foundation of preferences for the modality of social assistance received is rooted in the neoclassical model of consumer choice. Southworth (1945) argues that consumers' preferences for delivery modalities of in-kind versus cash depend on the nature of the transfers and target populations. Variation in consumer preference for in-kind versus cash assistance depends on the nature and amount of the aid transfer. If an in-kind transfer is infra-marginal, i.e., less than what beneficiaries would otherwise spend on food, then there is no difference in preferences between in-kind and cash transfers. However, if in-kind transfers are extra-marginal, i.e., more than what beneficiaries would otherwise spend on food, the transfer could introduce welfare losses and, hence, would be less preferred than receiving a cash transfer.

Consistent with this theoretical perspective, empirical studies show that in-kind transfers increase caloric consumption more than cash assistance, despite some important variations across contexts. Cunha (2014) and Hidrobo et al. (2014) found that in some middle-income countries, cash transfers led to improved dietary diversity compared to in-kind transfers. However, evidence from poorer populations remains inconsistent, demonstrating the importance of context and associated exogenous factors on these preferences. For example, Hoddinott et al. (2018) find no evidence that rural populations in Niger benefit more from

cash transfers. Thus, for vulnerable populations in low-income countries residing in areas with low market functionality and high supply variability, in-kind assistance improves caloric uptake. For improving dietary diversity, however, anecdotal evidence suggests that the impact of in-kind assistance is contingent on external factors (Hoddinott et al. 2018; Schwab 2020).

Building on the neoclassical model of consumer choice, much of the economics literature maintains that cash should be preferred over in-kind assistance as the cash modality offers greater autonomy and flexibility for the recipient household. However, several empirical studies demonstrate somewhat more heterogeneous preferences (Gentilini 2007; Gentilini 2016; Gentilini et al. 2020; Hirvonen and Hoddinott 2021). Modality preference is rather shaped by multiple endogenous and exogenous factors. Such factors include specific characteristics of beneficiary populations, community dynamics, program objectives, implementation costs, levels of financial development and inclusion, market functionality and capacity, and intrahousehold variations in preferences, among others (Gentilini 2016; Jeong and Trako 2022; Berkouwer et al. 2021; Hirvonen and Hoddinott 2021). In addition, price fluctuations critically shape the choice between a preference for cash or for in-kind assistance, thus adding further complexity to the choice of modality. In-kind assistance is often favored due to its insurance function and the stability in access to essential commodities it offers in the face of market volatility (Gadenne et al. 2024; Gentilini et al. 2020; Hirvonen and Hoddinott 2021). Market functionality and access are equally important in defining preferences between cash and in-kind assistance. Context-driven transaction costs, safety and security, and cultural norms all affect individuals' access to markets (Lwamba et al. 2022; Buvinic et al. 2013). Moreover, households' access to financial tools and physical storage facilities may also influence their modality preferences. There is little evidence on how such socioeconomic factors, alongside safety and security, impact beneficiaries' access to and trust in banking and financial services to save what cash they obtain or any access to physical storage for in-kind transfers. Evidence from Cameroon shows that some beneficiary households prefer in-kind assistance due to barriers to safely storing at home any cash assistance received (Freccero et al. 2019). Such concerns were reported more frequently by women.

Preferences for which form aid transfers should take are likely to vary across contexts and target populations. Socioeconomic fragility and conflict introduce multiple interrelated factors that can shape these preferences. In conflict-affected settings, the operational environment is characterized by weakened institutions, disruption of markets and supply chains, and challenges relating to the targeting, coverage, and overall effectiveness of social protection programs (Abay et al. 2025; Callen et al. 2025; Lind et al. 2022; Ghorpade 2017). Responding to humanitarian needs in such contexts necessitates innovative delivery mechanisms that can efficiently reach more beneficiaries at lower cost. Cash-based assistance is increasingly being deployed in conflict-affected settings (Jeong and Trako 2022; Abay et al. 2025). However, while some studies demonstrate positive impacts on food security, consumption, and diversity outcomes, evidence of the impact of cash assistance on broader welfare outcomes remains mixed (Jeong and Trako 2022; Tappis and Doocy 2018; Jeong and Trako 2022; Premand and Rohner 2024; Kosec and Mo 2025; Sabates-Wheeler et al. 2025). The effectiveness of cash transfers on broader welfare outcomes often is undermined when traditional methods of delivery of aid are not feasible or involve high logistical and transaction costs (Callen et al. 2025). An emerging literature on alternative humanitarian assistance modalities highlights the potential of new delivery technologies,

such as digital cash platforms, as a means of better limiting aid diversion, lowering transaction costs, and even reducing intrahousehold or community pressures to share resources (Riley 2024; Callen et al. 2025; Abay et al. 2025). However, access to these digital transfer services remains limited, especially among marginalized populations in conflict-affected contexts, such as IDPs.

2.2 Intrahousehold preferences

While classical household models, such as those advanced by Samuelson (1956) and Becker (1974), argue that households function as a cohesive unit to optimize shared resources and responsibilities and, consequently, their members will typically share similar preferences, new empirical studies are increasingly challenging these model assumptions. More recent studies have moved away from neoclassical household choice models and shifted towards collective models, which reject the notion of the household as a unitary decision-making unit. The recent research literature on decision making within households instead emphasizes intrahousehold bargaining dynamics and heterogeneity in individual preferences (Thomas 1990; Chiappori 1988; Kooreman 1988; Browning and Chiappori 1998; Udry 1996; Fiala and He 2017; Zou et al. 2025).

The research that has employed intrahousehold bargaining models generally has found that the effectiveness of social assistance transfers depends on who in the household receives the aid. Empirical research by Duflo (2000; 2003), Chiappori and Donni (2009), Hoddinott and Haddad (1995), Doss (2013), and Quisumbing and Maluccio (2000) demonstrate that the efficiency of a public transfer program and the distribution of aid and its use within households will often depend on the gender of the individual recipient of the assistance. Development interventions that target poor households in general will improve the average living standards of members of the household, including leading to some improvements in the well-being of women in the household. However, tailored direct targeting of aid for the household specifically to women in the household is likely to have a greater impact on women's livelihoods (Ashraf 2009; Duflo 2012; Alem et al. 2023; Field et al. 2021). With regards to preferences for cash or in-kind assistance, women are more likely to prefer aid modalities that better enable them individually to utilize or control the use of the transfer for the household, although evidence on this remains scant (Gentilini 2016).

Thus, gender-specific preferences for aid modalities and intrahousehold prioritization patterns for the use of any aid received are likely to be complex and dynamic. Moreover, allocations of aid resources within the household will be contingent on access to public information, often resulting in asymmetric information between spouses—typically, husbands will have better access to public communication channels than wives. These differences in access to information can affect the way aid transfers to the household are used and their ultimate impacts (Ashraf 2009; Doss 2013). Luke and Munshi (2011), for example, demonstrate how the effects of aid on women's income are only observed when men's and women's preferences differ, and women are able to decide and act on these preferences. Similarly, Miller and Mobarak (2013), in a study of the impact of a technology intervention provided to households, found that, despite the preferences of wives differing from those of their husbands, the women often lacked the agency to make decisions regarding purchases of the improved technology. These preference differences were found to be more common for women with lower decision-making authority within their households. Agency and autonomy in decision-making within the household empower women to define their self-

interests and make choices (Kabeer 1999; Heaton et al. 2025; Ashraf 2009; Braaten and Martinsson 2015; Peterman et al. 2015). However, the measurement of agency requires an assessment of control over assets or resources that facilitate the ability to make decisions and act on them (Shibata et al. 2020).

In the context of humanitarian assistance, context matters, as women face varying types and levels of structural gaps that impede their decision-making abilities within their household (Kabeer 2024; Heaton et al. 2025; Alsina and Eldridge 2025). Social and cultural norms characterizing intrahousehold decision-making roles shape the impact of any aid the household receives on different members (Kabeer 2024; Alsina and Eldridge 2024; Doss 2013). This relationship reinforces the need for gender-sensitive humanitarian programming and interventions. Additionally, context-specific understanding of gender-driven risks, such as domestic and sexual violence, is critical to assess how specific interventions might affect women and whether and, if so, how gender-sensitive framing of adaptive responses to conflict is required (Buvinic et al. 2013; Freccero et al. 2019).

Despite some studies demonstrating intrahousehold differences in preferences for various technologies and associated decision-making ability across various contexts, most of these studies come from politically and economically stable contexts (e.g., Gentilini 2016; Doss 2013; Miller and Mobarak 2013; Gulati et al. 2024; Gartaula et al. 2024). Moreover, none of the studies specifically addressed intrahousehold differences in preferences. There is little rigorous research on how conflict and associated socioeconomic fragility shape households' choices and associated intrahousehold bargaining processes. This is primarily because large-scale, high-quality household survey data are rarely available in conflict-affected settings (Abay et al. 2022; Buvinic et al. 2013; Collyer et al. 2024). Behaviors and preferences within households, including those differentiated by gender, can be significantly altered in contexts of active conflict, particularly if the conflict results in household displacement (Abay et al. 2025; Collyer et al. 2024; Malapit and Brown 2023). Displaced individuals face multidimensional deprivations. While many of these are due to the conflict, others arise from pre-existing gender-related disparities, such as the exclusion of the specific perceptions and preferences of women in decision making in the household (Admasu et al. 2021; Malapit and Brown 2023; Collyer et al. 2024). More generally, Lowe et al. (2022) demonstrated that displaced people have limited knowledge and understanding of social protection programs, which might also result in limited trust in those programs. Additionally, displaced households face barriers of several types in accessing those programs (Freccero et al. 2019).

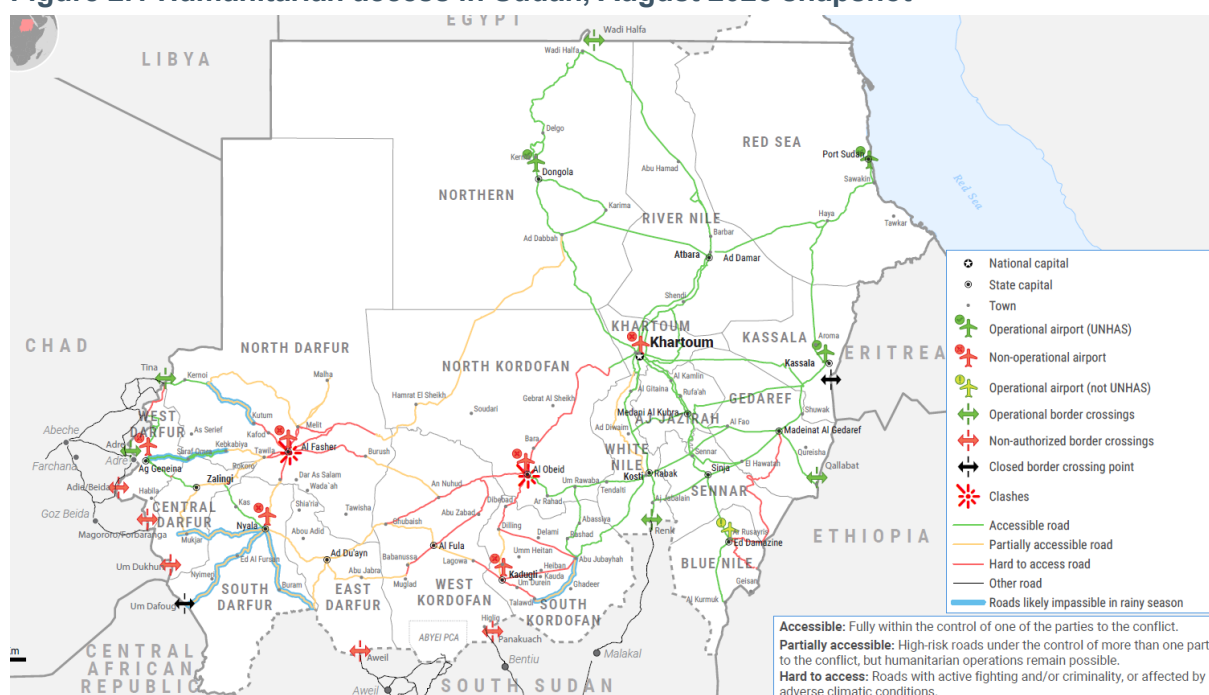
2.3 The case of Sudan

Sudan's political and security situation has been volatile for decades. Thousands of people are internally displaced, even as others are hosting refugees from elsewhere, resulting in large impoverished populations in need of humanitarian assistance. In April 2023, conflict erupted in Sudan's capital, Khartoum, between the Sudanese Armed Forces (SAF) and the Rapid Support Forces (RSF), marking the start of the country's most recent episode of conflict. The current conflict has devastated lives and livelihoods while displacing millions and causing what is now the largest displacement crisis in the world (IDMC 2025). The urban nature of the conflict at its onset pushed millions of people out of their hometowns and cities (IDMC 2025; UNHCR 2025; Ahmed et al. 2025). According to UNHCR (2025), 7.8 million people have been internally displaced within Sudan, while 4.1 million people have fled to

neighboring countries. Humanitarian needs are at an all-time high—30.4 million people are in need of assistance (Humanitarian Action 2025b). Despite continuing efforts to reach vulnerable populations, the humanitarian response remains constrained for at least three reasons.

- Conflict in many regions has severely impacted essential infrastructure and the delivery of public services. This has sharply reduced economic activity, limited domestic trade flows, and blocked most trade routes (Ahmed et al. 2025; Guo et al. 2023; Abushama et al. 2023; Kirui et al. 2023; Siddig et al. 2023). As a consequence, the transport of in-kind aid to populations in need is similarly sharply constrained
- The control of specific regions by the SAF or RSF poses bureaucratic impediments and constraints on access to vulnerable populations. Approvals from the faction then in control of a region must be obtained to transport and deliver aid. The fluidity of the conflict traps civilians in conflict zones and raises security threats in delivering humanitarian assistance. Figure 2.1 shows the logistical constraints imposed by the dynamic conflict in Sudan as of mid-2025. Passage between western and eastern Sudan was constrained, while movement was easier within SAF-controlled or RSF-controlled regions. The dynamic conflict is leaving millions of people with limited or delayed access to assistance (Humanitarian Action 2025a; Abushama et al. 2023).

Figure 2.1 Humanitarian access in Sudan, August 2025 snapshot



Source: OCHA (2025).

- Recent cuts to funding have limited the capacity of humanitarian actors while also reducing the size of transfers going to vulnerable populations across Sudan. Only 25 percent of the funding required to provide humanitarian services to those in need had been received as of September 2025 (OCHA 2025). Consequently, humanitarian organizations are having to revisit the effectiveness and cost-efficacy of their programs to determine how to serve conflict-affected populations adequately with fewer resources—particularly through identifying humanitarian aid strategies that involve

lower transaction costs (Callen et al. 2025; Abay et al. forthcoming). Humanitarian actors are being forced to move away from conventional in-kind support towards cash-based assistance (CCS 2024a). However, the targeting and delivery of cash transfers face multiple challenges in Sudan, including but not limited to disruptions to the banking sector and telecommunications (Abay et al. 2025; CCS 2024b).

The broad geographical spread of the conflict and associated patterns of population displacement intensify the challenges of delivering humanitarian aid to those affected. Even before the start of the current conflict in 2023, Sudan already hosted an estimated 3.8 million IDPs, mostly from the Darfur and Kordofan States (IOM 2024). The current conflict has pushed an additional 7.1 million people out of their home areas (IOM 2024). Moreover, women and children make up a large share of those displaced—2.7 million of IDPs in Sudan are women and girls of reproductive age (UNFPA 2024).

The mobility patterns of IDPs in Sudan have continued to shift in response to the spread of the conflict. For this study, our particular interest is the origins of internally displaced households in the study states of Kassala, Gedaref, and Blue Nile. The majority of IDPs from Khartoum, Aj Jazirah, and Sennar states were displaced to Kassala and Gedaref (IOM 2025). In contrast, most IDPs in Blue Nile have been displaced within the state itself, given the state's proximity to conflict areas. Evidence from the 2024 Urban Household Survey for Sudan, which was implemented by IFPRI, echoes these findings—the sample of urban households surveyed in the three study states showed high proportions of internally displaced households who had been displaced by the conflict from their states of origin (IFPRI and UNDP 2024).

3. DATA AND MEASUREMENT OF KEY VARIABLES

3.1 Internally displaced household survey data

The data for this study come from a large household survey conducted between July and September 2025 in three IDP-hosting states in Sudan: Kassala, Gedaref, and Blue Nile. Our sample is drawn from a database of distribution centers and internally displaced households who are direct beneficiaries of humanitarian assistance from the World Food Programme (WFP). The selection of the internally displaced household sample was informed by consultations with the WFP Sudan Country Office and benefited from WFP's listings on the locations and numbers of internally displaced households in the three study states.

The household survey covered 126 distribution centers, with an average of 18 displaced households sampled per distribution center, for a survey sample of about 2,300 households.² The firm contracted to implement the survey was provided with a list of the selected distribution centers. However, no pre-existing comprehensive household lists for the centers were available due to security concerns and privacy considerations. Similarly, door-to-door listing exercises in the distribution centers were also not feasible for the same reasons. Using the partial lists provided by WFP of internally displaced households in the centers, the survey

² The original plan was to cover a slightly larger sample of distribution centers and internally displaced households. However, due to security challenges, the rainy season, and the return of internally displaced households to their places of origin, we successfully covered 126 distribution centers. The household survey was also designed to study the impact of humanitarian assistance cuts and delays on the welfare of internally displaced households. To this end, we randomized the interview dates to create an exogenous variation on the timing of aid delays. These details will be discussed in more detail in a forthcoming companion paper.

firm randomly selected households. However, as the lists were not necessarily comprehensive of all internally displaced households resident at each center, the sample selection procedure cannot be characterized as being fully systematic and random. Consequently, the sample is not strictly fully representative of the population of internally displaced households residing at each distribution center. Our final sample comprised 2,307 internally displaced households across the 126 distribution centers.

The survey was designed to collect detailed intrahousehold and household-level data. The household survey questionnaire consisted of modules on household demographics, access to humanitarian assistance, aid modality preferences, food security, dietary diversity, access to markets, experience of shocks by the households and the coping mechanisms used in response, happiness and well-being, trust, agency, and autonomy in decision making, mental health, and access to markets.

Out of the total sample of 2,307 households, 55 percent (1,275) were households in which both spouses were interviewed to obtain information from both the primary adult male (husband) and adult female (wife) decision-makers in the household.³ Data from these households is what is primarily used in the analysis described in this paper—1,275 households and 2,550 respondents. Specifically, we elicited from all spouses in these households their aid modality preferences, their perceived stress and self-efficacy based on indexed scales, and their assessment of their own autonomy in decision making.

3.2 Measurement of key variables of interest and descriptive statistics

To capture intrahousehold differences in preferences for the modality of humanitarian assistance for the household, we individually asked each spouse whether they would prefer to receive humanitarian support in cash, in-kind, or in a hybrid form of part cash and part in-kind. To better understand the underlying motivations for the preference they reported, respondents were then asked why they preferred that option, with separate sets of probing questions for cash, in-kind transfers, and hybrid assistance. Taken together, these questions provide insights into beneficiary priorities, trade-offs, and the reasoning behind their preferences, offering a nuanced understanding of the valuation and acceptability of different aid modalities. To measure decision-making autonomy within the household, we included questions to capture information on whether decisions regarding the use of humanitarian assistance are made solely by the household head, solely by the spouse, as a joint decision, or are delegated to other members of the household. To elicit the impact of potential external factors on these gender-differentiated aid modality preferences, we measured households' access to markets and their ability and confidence in storing cash and in-kind within their households.

Table 3.1 shows that cash was the most popular modality reported by both husbands and wives in the displaced households surveyed. Just over half of the sample of spouses

³ The design of our internally displaced households survey specified that we would collect information from all spouses in about 60 percent of the households in our sample. In recent household surveys conducted by IFPRI in Sudan, approximately 75 percent of households were male-headed. However, given that the survey here is on internally displaced households, we hypothesized that about 15 percent of these nominally male-headed households may be living in their displaced location at the IDP centers without the male head being present. We also hypothesized that the households are monogamous, where our survey captures responses of only one adult female – the “main” female in the household, thus, in incidents of polyamorous are not captured in our sampling frame. Additional details about the design of the survey sample are given in our registration and pre-analysis plan (AEARCTR-0016431), available from the authors.

(50.6 percent) prefer cash. That almost an equal share of spouses reported preferring to receive some or all of the aid in-kind, however, suggests that the greater autonomy in use by the household that cash assistance provides, while valued by many, is insufficiently valuable for those spouses preferring to receive aid in-kind relative to the advantages the household would obtain, in their view, from obtaining assistance in-kind. Table 3.1 also shows gender-disaggregated variation in these aid modality preferences. Although both men and women prefer cash, wives prefer the solely cash modality of assistance to a lower extent than husbands. Conversely, women's preference for receiving aid solely in-kind exceeds men's preference for this form of assistance (19.8 percent of husbands) to a considerable degree.

Table 3.1 Modality preference of spouses in internally displaced households, by gender, share of respondents

Modality Preference	All	Women	Men
Cash	0.506 (0.500)	0.488 (0.500)	0.524 (0.499)
In-kind	0.230 (0.421)	0.263 (0.440)	0.198 (0.398)
Hybrid (combination of cash and in-kind)	0.264 (0.440)	0.249 (0.433)	0.278 (0.448)
Observations	2,550	1,275	1,275

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

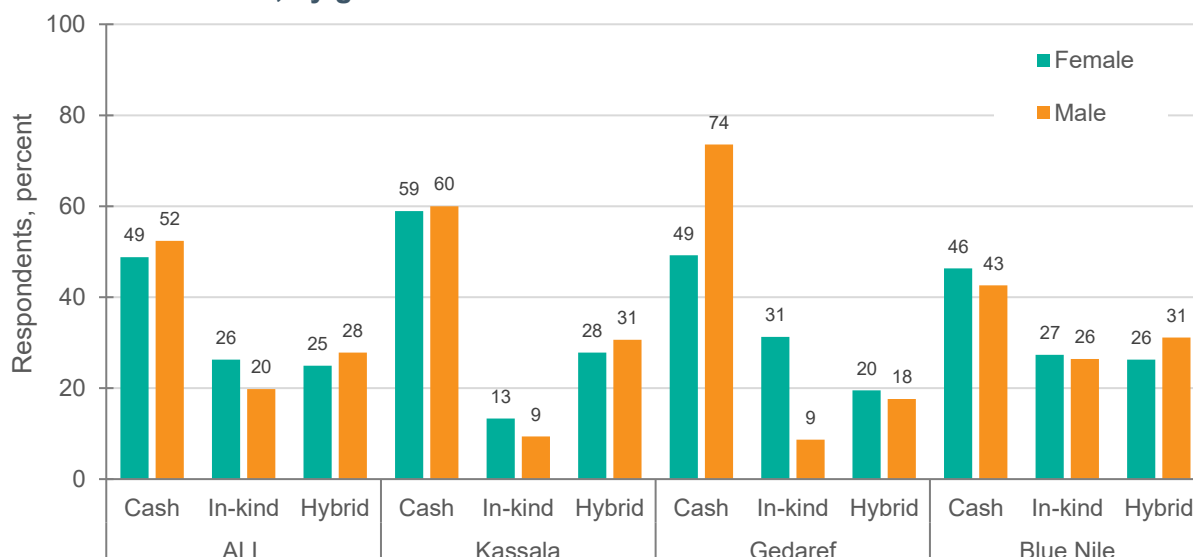
Modality preferences for aid received by the household were also asked based on five (rather than three) possible preferences, excluding the hybrid option: cash, digital cash, in-kind, value vouchers, or indifference about the modality of the aid received (Annex Table 1). These results show a somewhat stronger preference for cash assistance. Nearly 60 percent of respondents preferred cash-in-hand, and 12 percent preferred digital cash. When disaggregated by gender, this overall pattern is seen—the majority of both husbands and wives prefer cash-in-hand. However, wives prefer in-kind assistance to a greater extent than husbands—26 percent, compared to 18 percent. Nonetheless, both women and men exhibit an overwhelming preference for a version of cash (cash and digital cash) compared to the other modalities.

The aid modality preferences reported by the spouses in the internally displaced households exhibited notable variation across the three states. In aggregate, cash is the preferred form of humanitarian assistance they wish to receive. However, by state, the proportion of households preferring cash assistance varies from the lowest share of 44 percent of spouses in Blue Nile state to 59 percent in Gedaref and 61 percent in Kassala state.

Gender-differentiated preferences among spouses for the modality of humanitarian assistance they wish to receive also vary by state (Figure 3.1). Notably, the difference in preference for in-kind assistance between husbands and wives is most pronounced in Gedaref, where only 9 percent of husbands reported preferring in-kind assistance, compared to 31 percent of wives, while for cash assistance, the preference of husbands for cash far exceeds that of wives—74 percent compared to 49 percent. In Kassala state, a lower proportion of wives prefer in-kind assistance (13 percent), compared to the wives surveyed in Gedaref and Blue Nile states. However, when compared to husbands within Kassala, wives still favor in-kind assistance more, while the share of wives that prefer cash is nearly identical to the share of husbands who do so. In Blue Nile, the proportion of respondents preferring cash assistance is relatively low among both wives and husbands within the internally

displaced households. Moreover, the differences by gender in aid modality preferences are more modest—wives exhibit a slightly higher preference for cash transfers relative to husbands, while the share of wives and husbands preferring in-kind assistance is nearly identical.

Figure 3.1 Aid modality preferences reported by spouses in internally displaced households, by gender and state



Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Heterogeneity in aid modality preferences across the three study states is likely driven by differences in economic and social conditions—variation in infrastructure, societal and cultural norms, or economic structures, as well as the degree of conflict-related insecurity. In Kassala and Gedaref, the stronger preference for cash assistance compared to Blue Nile may reflect better access to functioning markets and greater liquidity utilization, which allows households to access a more diverse range of goods and services. Displaced households in Kassala and Gedaref are better able than those in Blue Nile state to exercise greater autonomy in how they utilize cash assistance, so they prefer receiving aid as cash rather than as potentially more constrained in-kind assistance. In contrast, given more challenges in infrastructure, harsher displacement conditions, poorer access to markets, and multilayered infrastructural issues in Blue Nile state, households there are more likely to prefer in-kind assistance to buffer against increased food insecurity, reduced access to markets, and high price volatility.

When disaggregated by gender, the reasons why women and men prefer cash or in-kind aid show some variability (Table 3.2). While the majority of both spouses reported “high food prices in markets” as the main reason they prefer in-kind assistance, women appear to face more constraints in accessing markets. About 21 percent of wives reported “limited access to market” as the main reason why they prefer in-kind aid, while only 11 percent of husbands did. When asked about reasons for preferring cash over in-kind aid, about two-thirds of both wives and husbands felt that cash provides them “freedom of choice”.

Table 3.2 Reasons for modality preferences of spouses in internally displaced households, by gender, percent of respondents

Reason for Preference for Aid Modality	Women	Men
In-kind aid modality		
Access to markets is limited	21.0	10.6
Food prices are high in the market	46.4	49.6
To facilitate control over transfer, i.e., from spouse	18.0	20.8
To reduce transaction costs, i.e., costs of going to the market	12.3	15.9
Other	2.4	3.1
Cash aid modality		
Want freedom of choice	65.1	67.0
In-kind food aid may not be nutritious or may be ruined or insufficient	4.5	3.0
To facilitate control over transfer, i.e., from spouse	12.1	11.7
To reduce pressure for sharing the transfer	0.8	0.8
To facilitate savings	4.0	3.5
Easier mobility with the transfer, i.e., cash easier to carry than in-kind aid	11.6	11.7
To protect the aid received from theft, looting, and misappropriation	0.0	0.8
Other	1.7	1.6

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Autonomy in decision-making regarding who decides how to use humanitarian assistance received by the internally displaced household varies by both state and the gender of the spouse (Table 3.3). At the aggregate level, the majority of respondents (both wives and husbands) report that decisions regarding the use of such aid are predominantly joint between the spouses. Respondents in Kassala report the highest degree of joint decision-making between spouses. In contrast, respondents in Blue Nile state report higher proportions of an individual spouse solely making the decision on how aid received by the household is used—51 percent of spouses in Blue Nile reported that either “myself” or the other spouse made these decisions, compared to 34 percent in Kassala and 45 percent in Gedaref.

Table 3.3 Who within the displaced household decides on how to use any assistance received, by state and gender of respondent, percent of spouses

Decision-maker	Kassala			Gedaref			Blue Nile		
	State	Women	Men	State	Women	Men	State	Women	Men
Myself	18.3	11.2	25.4	21.5	15.3	27.7	25.8	25.8	25.8
Spouse	16.1	21.4	10.7	23.8	28.0	19.5	25.6	25.4	25.8
Joint decision of spouses	61.7	62.9	60.5	51.6	53.8	49.5	47.6	47.8	47.4
Other household members	3.9	4.5	3.4	3.1	2.9	3.3	1.0	1.0	1.0
Observations	355	178	177	614	307	307	1,556	780	776

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Gender-differentiated responses among the spouses exhibit significant contrast in autonomy in decision making, with some important variation between states. In Kassala and Gedaref, only 11 and 15 percent of women, respectively, reported that they had sole autonomy in deciding how to use any assistance received by the household, compared to 26 percent in Blue Nile. Similarly, when comparing the responses of wives and husbands within a state, fewer wives reported having sole autonomy in decision-making compared to husbands—11 percent of wives compared to 25 percent of husbands in Kassala and 15 percent compared to 28 percent in Gedaref. Notably, respondents in Blue Nile state report no differences

between wives and husbands in their ability to solely decide on how to make use of humanitarian assistance received by the household. These results are likely driven by differences in social norms concerning gender roles across the study states.

The notably stronger role for women in household decision making in Blue Nile state, compared to Kassala and Gedaref states, is particularly striking in the Sudanese context. Prevailing social and cultural norms make it uncommon for Sudanese husbands to openly acknowledge that their wives make important decisions within the household. That husbands in internally displaced households in Blue Nile state are more likely to report their wives as key decision-makers within their household suggests a relatively higher level of female agency and acceptance of women's decision-making roles in the displaced households in this state.

Household members other than the spouses rarely influence decisions on the use of humanitarian assistance. However, women in Kassala report a somewhat higher share of other household members participating in such decision making than in the other states. This confirms a lower degree of autonomy for wives in internally displaced households in Kassala, compared to the other states. However, even in Kassala, these other members do not greatly influence decisions on how aid is used—such decisions are largely made by one or both spouses.

Decision-making patterns on the use of humanitarian assistance within internally displaced households also show variation by the modality of the aid received (Table 3.4). Overall, the preference for in-kind assistance increases when the spouse of the respondent is the sole decision-maker on how to use the aid, while preference for cash assistance is more popular among those spouses who reported having sole autonomy on deciding how the aid will be used. Table 3.4 shows that wives' preferences for in-kind assistance are larger when their husband solely makes the decision on how to use the aid—24 percent of wives prefer in-kind aid when they have sole autonomy in deciding how the aid will be used, compared to 31 percent preferring in-kind aid if their husband solely decides. We do not find similar sharp differences in preferences among men, which implies potential differences in how husbands and wives perceive and leverage their decision-making roles within their household.

Table 3.4 Who within the displaced household decides on how to use any assistance received, by modality preference and gender, percent of spouses

Decision-maker	Cash			In-kind			Hybrid		
	All	Women	Men	All	Women	Men	All	Women	Men
Myself	53.7	55.6	52.1	21.6	24.3	19.4	24.8	20.2	28.5
Spouse	52.3	48.8	56.3	27.0	30.8	22.6	20.8	20.5	21.2
Joint decision of spouses	48.7	46.3	51.2	21.7	24.9	18.3	29.6	28.8	30.5
Other household members	51.0	48.0	54.2	20.4	24.0	16.7	28.6	28.0	29.2

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

The preference for cash transfers vis-à-vis autonomy in decision-making exhibits different dynamics. Among wives reporting “myself” as the decision-maker for the use made of humanitarian assistance received by the household, the preference for cash is higher—56 percent of wives prefer cash if they are the sole decision maker in the household versus 46 percent when such decisions are made jointly with their husband. Wives' preference for cash assistance declines to 49 percent when it is the husband who solely decides how to use

the aid. Note, however, that even a lower share of wives prefer cash assistance when decisions on the use of the aid are jointly made by both spouses.

4. EMPIRICAL STRATEGY

We conduct a within-household comparison of the modality preferences of spouses for humanitarian assistance delivery mechanisms. The key outcome of interest is the modality preference (cash, in-kind, or hybrid) measured at the individual level for each spouse as the primary decision-makers within the internally displaced households surveyed. To facilitate comparison, we limit our analysis to households with both a husband and a wife. The main explanatory variable is gender, which allows us to assess whether husbands and wives differ systematically in their preferences for the modality of aid received by the household. We start by estimating the following fixed effects specification that facilitates within-household comparison of aid modality preferences:

$$Y_{ih} = \alpha_h + \beta_1 \text{gender}_{ih} + \varepsilon_{ih} \quad (1)$$

where Y_{ih} stand for modality preference (cash, in-kind, or hybrid) of spouse i from household h . α_h refers to household-specific fixed effects capturing all differences across households. This specification leverages within-household variation by comparing the husband and the wife decision-makers in the same household. The fixed effects absorb household-level characteristics, e.g., wealth, household size, exposure to shocks, and access to basic services. gender_{ih} stands for the gender of the spouse, a binary indicator taking the value of 1 for female respondents and 0 for male respondents. ε_{ih} is a random error term capturing the remaining unobservable factors shaping modality preferences. To account for potential within-cluster correlation in error terms, we cluster standard errors at the distribution center level, which allows us to account for correlated shocks at the community level. β_1 captures intrahousehold differences in preferences for aid transfer modalities.

To examine the role of autonomy and decision-making in intrahousehold differences in preferences for aid modalities, we extend the empirical specification in equation (1) by including autonomy and decision-making roles in the model. In the survey, autonomy and decision-making roles were measured using questions asked to both spouses about who decides how aid transfers or other assistance from humanitarian organizations are used within the household. The extended empirical specification of equation (1) is:

$$Y_{ih} = \alpha_h + \delta_1 \text{gender}_{ih} + \delta_2 \text{Autonomy}_{ih} + \varepsilon_{ih} \quad (2)$$

where Autonomy_{ih} represents the autonomy and decision-making of spouse i in household h . These are categorical variables with response options of self, spouse, joint decision by both spouses, other household members, and other non-household members. The main parameters of interest in equation (2) are δ_1 and δ_2 . While δ_1 captures intrahousehold differences in preferences for aid transfer modalities, δ_2 quantifies the role of autonomy in intrahousehold differences in preferences for aid transfer modalities. However, husbands and wives may respond differently to the autonomy and agency they have in terms of their aid modality preference. For example, even if they assume similar roles within the household, husbands and wives may have varying levels of leverage over how any humanitarian assistance the household receives is used, which can shape their preference for the modality of aid received. To test this, we expand the empirical specification in equation (2) by

interacting the gender of the spouse with their autonomy and decision-making role in the household as follows:

$$Y_{ih} = \alpha_h + \gamma_1 gender_{ih} + \gamma_2 Autonomy_{ih} + \gamma_3 gender_{ih} \# Autonomy_{ih} + \omega_{ih} \quad (3)$$

where all terms except the interaction term are as described earlier. The interaction term and associated coefficients in equation (3) identify potential differential responses across husbands and wives as to their roles in deciding how to use any humanitarian assistance received. For example, if wives value their sole decision-making role more than their husbands in guiding their preference among the different modalities of aid, we expect to detect statistically significant values of γ_3 .

Finally, we also explore whether access to markets and saving infrastructure, and self-control issues and associated commitment devices explain preferences for different aid modalities. For this purpose, we elicited in the survey the confidence respondents had in their ability to save each of the types of aid transfers. We also obtained information on their access to savings or storage facilities. Respondents were asked to indicate their confidence in their ability to save cash or in-kind aid transfers using a five-point Likert scale, which ranges from 0, which represents “Not confident at all”, to 4, which corresponds to “Extremely confident”. Similarly, we explore whether access to local markets explains some of the differences in aid modality preferences. We do so by collecting information on whether the household had accessed local food markets in the past 30 days. Wives and husbands may value and respond differently to different modalities of aid, even if they have similar access to food markets. Thus, we also interact the gender of respondents with their access to food markets.

5. RESULTS AND DISCUSSION

In this section, we present empirical evidence on intrahousehold aid modality preferences and autonomy in decision-making with regard to the use of the humanitarian assistance by the internally displaced household. We further examine the implications of the gender of the respondent (husband or wife) on the modality preference of individual spouses and on their degree of autonomy in decision-making about the use of assistance. Additionally, we explore whether respondents’ self-control and associated confidence in storage facilities explain part of the differences in aid modality preferences between husbands and wives in our internally displaced household sample of spouse couples.

5.1 Intrahousehold preferences in the modality of humanitarian assistance

Table 5.1 provides estimates of equation (1), which explains aid modality preference as a function of the gender of the spouse within the household. We control for household fixed effects in the base model, ensuring that these differences reflect intrahousehold variation. The results indicate a statistically significant effect of gender on aid modality preferences. Within households residing in IDP camps, wives are significantly more likely to prefer in-kind transfers compared to their husbands. The coefficient associated with the gender variable shows that wives prefer in-kind assistance by 7 percentage points more than their husbands. These differences come from a lower share of wives preferring aid in cash or hybrid forms. Intrahousehold gender-differentiated preferences are less pronounced for cash assistance, being statistically insignificant at the 0<0.10 level. Wives are 2.8 percentage points less

inclined to prefer hybrid assistance compared to their husbands, reinforcing their relative preference for in-kind assistance.

Table 5.1 Intrahousehold modality preferences for humanitarian assistance received by displaced households by gender

	Cash	In-kind	Hybrid
Gender (women = 1)	-0.037	0.065***	-0.028*
	(0.025)	(0.018)	(0.016)
Household fixed effects	Yes	Yes	Yes
R-squared	0.67	0.73	0.68
Observations	2,550	2,550	2,550

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Notes: This table reports results from simple fixed effects regressions of modality preferences by gender of the respondent (spouse). The gender variable is binary, taking the value of 1 for women and 0 for men. The model only controls for gender and household fixed effects. Standard errors, clustered at distribution center level, in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

The results presented in Table 5.1 do not provide strong evidence to reject the default notion in the research literature that cash generally is preferred over in-kind assistance. However, the results show that individual preferences for the modality of aid received by the household may not be identical within the household. The preference of wives for in-kind assistance suggests that they have greater concerns about immediate household welfare and food consumption, while husbands' preference for cash assistance may be driven by their higher autonomy and associated desire for greater flexibility in how aid is used by the household (Alem et al. 2023; Schaner 2015; Doss 2013; Luke and Munshi 2011). While these results provide insights into intrahousehold preferences in a conflict-affected context of disrupted markets and heightened food insecurity, they may mask important heterogeneities.

Table 5.2 provides estimates of equation (2) to show the implications of decision-making roles and associated autonomy of spouses within internally displaced households on intrahousehold preferences for the modality of humanitarian assistance received. The effect of gender on aid modality preferences remains robust even after accounting for decision-making roles within a household.

Table 5.2 Intrahousehold modality preferences and autonomy in decision-making on use of humanitarian assistance in displaced households

	Cash	In-kind	Hybrid
Gender (woman = 1)	-0.038	0.065***	-0.027*
	(0.025)	(0.018)	(0.016)
Decision-maker = 2, partner/spouse	0.010	0.038*	-0.048**
	(0.029)	(0.020)	(0.023)
Decision-maker = 3, joint decision	0.016	-0.023	0.006
	(0.052)	(0.042)	(0.040)
Decision-maker = 4, other HH members	0.165	-0.089	-0.076
	(0.150)	(0.087)	(0.134)
Household fixed effects	Yes	Yes	Yes
R-squared	0.67	0.73	0.68
Observations	2,510	2,510	2,510

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Notes: This table reports results from simple fixed effects regressions of modality preferences by gender of respondent (spouse). The gender variable is binary, taking the value of 1 for women and 0 for men. The model only controls for gender, decision-making roles, and household fixed effects. The decision-making variable is a categorical variable capturing responses of both spouses in internally displaced households as to who decides how humanitarian assistance the household receives is used. The base decision-maker is "myself". Standard errors, clustered at distribution center level, in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Nonetheless, Table 5.2 shows that decision-making autonomy plays an important role in shaping aid modality preferences.⁴ When their husband, instead of themselves, is the decision-maker on how the aid is used, wives' preference for in-kind aid increases by about 4 percentage points, while their preference for hybrid forms of aid transfers declines by a comparable rate. This result confirms the preference of wives for in-kind or partly in-kind assistance over cash assistance due to in-kind goods being less fungible, harder to divert, and offering larger assurances of contributing to household consumption (Gadenne et al. 2024; Gentilini et al. 2020; Hirvonen and Hoddinott 2021).

Even assuming similar roles in decisions related to how any humanitarian aid the internally displaced household receives is used, wives and husbands may have varying levels of leverage to influence the ultimate allocation and use of these resources. This can affect the preference of each spouse for different modalities of aid transfers. To uncover these differences, Table 5.3 reports the results coming from equation (3), by interacting the gender and autonomy of spouses. The coefficients associated with the interaction terms show that wives are more responsive to their role in ensuring adequate food consumption for all household members, than husbands in their preference for the modality of aid. For example, when their husbands are solely responsible for deciding how to use any humanitarian assistance received, wives exhibit a 16 percentage points lower preference for the aid to come in the form of cash, compared to when the wives themselves are responsible for deciding how the humanitarian assistance is to be used. These results suggest that perceived or actual control over these decisions shapes the preferences of wives. These findings underscore the importance of considering intrahousehold bargaining power and the degree of decision-making authority among household members in deciding what form humanitarian assistance should be provided to needy households (Delaney and O'Toole 2008; Munro 2018). The form the aid takes has potentially important implications for how the assistance is then utilized by the household (Doss 2013; Quisumbing and Maluccio 2000; Hoddinott and Haddad 1995).

⁴ State-level variation in preferences also persists. Compared to Blue Nile state, respondents in Gedaref state prefer to receive aid in cash form by 17 percentage points, while in Kassala state, internally displaced households prefer in-kind assistance less than those in Blue Nile by 15 percentage points (Annex Table 2). These results likely reflect the impacts of exogenous factors such as infrastructure, market safety, and security as contributors to specific preferences for the modality of humanitarian assistance the households receive (Abay et al. forthcoming; Kirui et al. 2023).

Table 5.3 Intrahousehold gender-differentiated aid modality preferences and autonomy in decision-making on use of the aid in displaced households

	Cash	In-kind	Hybrid
Gender (woman = 1)	0.056 (0.050)	0.029 (0.040)	-0.084** (0.042)
Decision-maker = 2, spouse	0.085 (0.052)	0.006 (0.043)	-0.090** (0.045)
Decision-maker = 3, joint decision by both spouses	0.064 (0.061)	-0.040 (0.050)	-0.024 (0.047)
Decision-maker = 4, other household members	0.218 (0.157)	-0.108 (0.092)	-0.110 (0.146)
Woman# Decision-maker = 2, spouse	-0.155* (0.083)	0.066 (0.078)	0.088 (0.074)
Woman# Decision-maker = 3, joint decision by both	-0.108* (0.058)	0.040 (0.046)	0.068 (0.045)
Woman# Decision-maker = 4, other household members	-0.106 (0.165)	0.037 (0.106)	0.069 (0.149)
Household fixed effects	Yes	Yes	Yes
R-squared	0.67	0.73	0.68
Observations	2,510	2,510	2,510

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Notes: This table reports results from simple fixed effects regressions of modality preferences by gender of spouse. The gender variable is binary, taking the value of 1 for women and 0 for men. The model only controls for gender, decision-making roles, and household fixed effects. The decision-making variable is a categorical variable capturing responses of both spouses in internally displaced households for who decides how humanitarian assistance the household receives is used. The base decision-maker is "myself". Standard errors, clustered at distribution center level, in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

In view of varying preferences for the specific modality of any assistance being contingent on who decides how the assistance is used within the household, we also examine the concordance and discordance between spouses regarding decision-making on the use of such aid. About 80 percent of the sample couples agreed on who in the household decides how such humanitarian aid is used, while 20 percent exhibited discordance (Annex Table 3). Within most internally displaced households, decision-making roles are clearly defined and acknowledged. However, the fact that nearly one-fifth of responses by couples were discordant in characterizing who makes decisions within the household signals that a substantial minority experiences conflicting perceptions. Discordance is most pronounced when the husband reported being the sole decision-maker, while the wife reported that decisions are made jointly by both spouses or when both spouses reported that each was solely responsible for decision making (Annex Table 4). We postulate that, while the concordance and discordance measured can be attributed to measurement errors (Ambler et al. 2021), additional cultural factors may also shape these differing responses between wife and husband.

5.2 Beyond the household: What other factors shape preferences?

In addition to intrahousehold differences in preferences for the modality of humanitarian assistance received, access to markets and any transaction costs associated with making effective use of the different modalities of aid are likely to shape preferences (Abay et al. forthcoming). In contexts of armed conflict with the associated disruptions to market and food systems, not only the reach but also the impact of various humanitarian assistance modalities may differ, as their impact is contingent on multiple factors, including safety and security and the availability of markets and other livelihood services (Abay et al. forthcoming;

Hirvonen and Hoddinott 2021; Schwab 2020). Price volatility levels in local markets will also contribute to household preferences for the modality of the humanitarian assistance they receive (Gadenne et al. 2024; Gentilini 2016).

The context within which a displaced population resides shapes not only the effectiveness but also the relative preference of displaced households for a particular modality of humanitarian assistance (Abay et al. forthcoming; Jeong and Trako 2022; Ravallion 2022). In light of this, we examine how varying access to markets by internally displaced households affects intrahousehold aid modality preferences. Table 5.4 shows the results of the analysis of whether a household has reasonable access to markets correlates with whether wives and husbands have different preferences for the modality of any assistance their household receives. The results in Table 5.4 suggest that wives in internally displaced households without reasonable access to markets show a higher preference for in-kind aid and a lower preference for aid in the form of cash than do their husbands. The interaction terms between gender and having reasonable access to markets suggest that wives in internally displaced households with access to markets are 10 percentage points more likely to prefer cash assistance compared to both husbands and wives in households that do not have access to markets. These aid modality preferences potentially reflect sociocultural dimensions beyond conflict-induced fragilities alone, as well as varying responsibilities within the household associated with food purchases. As women are likely to be responsible for food purchases for the household, they are likely to be more sensitive and responsive to whether the household has reasonable access to markets than their husbands in their preference for the form of aid the household receives. These results allude to context- and conflict-driven transaction costs, security and accessibility, as well as cultural norms related to women's access to markets in Sudan (Lwamba et al. 2022; Buvinic et al. 2013).

Table 5.4 Intrahousehold aid modality preferences of spouses in displaced households and access to markets

	Cash	In-kind	Hybrid
Gender (woman =1)	-0.105*** (0.040)	0.089*** (0.032)	0.015 (0.028)
Woman#Market Access (Yes =1)	0.098** (0.041)	-0.035 (0.033)	-0.063** (0.030)
Household fixed effects	Yes	Yes	Yes
R-squared	0.67	0.73	0.68
Observations	2,544	2,544	2,544

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Notes: This table reports results from simple fixed effects regressions of aid modality preferences on gender of respondent and an interaction term of gender#market access. The gender variable is binary, taking the value of 1 for women and 0 for men, and market access is also a binary variable where having access is 1 and no access is 0. The model only controls for gender, gender-specific market access, and household fixed effects. Standard errors, clustered at distribution center level, in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Finally, we explore whether confidence in the saving or physical storage capabilities of the displaced household explains their preferences for the modality of humanitarian assistance they receive. The results in Table 5.5 suggest that as households' confidence in saving any cash assistance they are provided increases, their preferences shift away from in-kind assistance towards cash. If they are moderately confident in their ability to save the funds, they are 17 percentage points more likely to prefer cash, while those extremely confident of being able to save are 26 percentage points more likely to prefer cash. These results reflect households' trust in their ability to safeguard their liquid assets to use them more

autonomously and flexibly, despite conflict-induced risks (Abay et al. forthcoming; Freccero et al. 2019).

Table 5.5 Aid modality preferences of spouses in displaced households and access to markets, cash saving facilities, and produce storage facilities

	Cash	In-kind	Hybrid
Gender (woman =1)	-0.035 (0.025)	0.065*** (0.018)	-0.030* (0.016)
Decision-maker = 2, spouse	-0.011 (0.028)	0.047** (0.022)	-0.037* (0.021)
Decision-maker = 3, joint decision	-0.063** (0.029)	0.010 (0.023)	0.053** (0.024)
Decision-maker = 4, other HH members	-0.048 (0.079)	0.002 (0.066)	0.040 (0.072)
Market access in past 30 days, 0/1	0.046* (0.024)	-0.004 (0.026)	-0.044* (0.025)
Slightly confident in saving cash (code 2)	0.046 (0.036)	-0.048 (0.036)	0.002 (0.035)
Moderately confident in saving cash (3)	0.014 (0.040)	-0.086* (0.047)	0.072* (0.043)
Very confident in saving cash (4)	0.172*** (0.041)	-0.211*** (0.050)	0.039 (0.041)
Extremely confident in saving cash (5)	0.260*** (0.055)	-0.308*** (0.061)	0.048 (0.052)
Slightly confident in storing in-kind goods (code 2)	-0.040 (0.039)	0.059* (0.035)	-0.019 (0.036)
Very confident in storing in-kind goods (4)	-0.005 (0.043)	0.077* (0.041)	-0.072* (0.041)
Extremely confident in storing in-kind goods (5)	-0.103** (0.045)	0.211*** (0.052)	-0.108** (0.042)
State dummies	Yes	Yes	Yes
Observations	2,525	2,525	2,525
R-squared	0.062	0.077	0.028

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Notes: This table reports results from a simple OLS regression. The gender variable is binary, taking the value of 1 for women and 0 for men. The decision-making variable is a categorical variable capturing responses of both primary and secondary respondents for who decides how to use humanitarian assistance, the base being "myself". Confidence in storing in-kind and in storing in-cash are categorical variables with base = "not confident at all". Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

However, confidence in storing in-kind assistance shows the opposite trend. Having some confidence in being able to safely store produce increases both husbands' and wives' preferences for in-kind assistance, while extreme confidence in such storage amplifies the degree of preference for in-kind assistance. Households that are extremely confident in being able to safely store produce are 21 percentage points more likely to prefer in-kind assistance compared to households that are uncertain of their ability to safely store in-kind assistance. These results offer suggestive evidence that commitment devices and associated access to saving and storing infrastructure may shape respondents' preferences for alternative modalities of delivering humanitarian assistance.

5.3 Modality preferences of single and married women

To further examine the modality preferences of women in displaced households for humanitarian assistance, we also compare the preferences of women with husbands in the household (couples) with those of single women heading an internally displaced household. These single women include those with absent husbands at the time of the survey, as well as never married, divorced or officially separated, or widowed women. The two groups of women are likely to have different socioeconomic characteristics and varying levels of autonomy within their households. These factors can shape their preference for specific types of aid.

Table 5.6 shows that women with a husband in the displaced household are 11 percentage points more likely to prefer in-kind assistance compared to women who headed their displaced household alone at the time of the survey. These results reflect the complexity of intrahousehold aid modality preferences and prioritization patterns and how women's aid preferences can be inferred through their agency and autonomy (Heaton et al. 2025; Doss, 2013; Ashraf 2009; Kabeer 1999). Although attributing these differences to a specific source of variation across the two groups of women remains challenging, differences in the level of autonomy and associated roles within the household can be one factor. Women who head their household without a husband present presumably hold full autonomy over the use of any humanitarian assistance the household receives, while women with husbands in the household are likely to share with or delegate these roles to their husbands.

Table 5.6 Aid modality preference of women in displaced households with and without a husband resident

	In-kind	Cash	Hybrid
Woman with husband resident in the household, 0/1	0.105*** (0.026)	-0.052* (0.029)	-0.054** (0.025)
Constant	0.159*** (0.020)	0.545*** (0.025)	0.296*** (0.021)
State dummies	Yes	Yes	Yes
R-squared	0.01	0.00	0.00
Observations	1,980	1,980	1,980

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Notes: This table reports results from simple OLS regressions of modality preferences by women with and without a husband resident in the displaced household. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Thus, our results confirm that when women have full autonomy in deciding how to use humanitarian assistance, the likelihood of their preferring in-kind aid is lower. We infer from this that they have a higher preference for the freedom of choice that cash assistance provides in how the aid is used. With cash, single women heading households are better able to define their self-interests or self-preferences and employ their empowerment capabilities (Kabeer 1999; Ashraf 2009; Braaten and Martinsson 2015; Peterman et al. 2015). Control over the decision on how to use any assistance received facilitates their exercise of agency (Shibata et al. 2020).

In addition, women's preference for in-kind or cash aid is consistent with their level of confidence in being able to safely save cash or in-kind assistance (Annex Table 5). Women reporting being very or extremely confident in storing in-kind assistance preferred such aid. This finding aligns with those of Freccero et al. (2019), who found that women are more likely

to have concerns about storing cash safely, compared to their confidence in storing in-kind assistance.

6. CONCLUSIONS

Humanitarian organizations globally are witnessing an unprecedented funding gap because of cuts in assistance from donors, while demand for humanitarian assistance continues to increase. These parallel trends are forcing such organizations to revisit their delivery and targeting modalities to improve the effectiveness and cost-efficacy of the aid they provide conflict-affected populations. At the center of these debates is the choice and relative efficacy of alternative modalities of delivering humanitarian assistance. Understanding potential beneficiaries' preferences for alternative modalities of aid is crucial for improving the effectiveness of humanitarian services, especially in conflict-affected settings where humanitarian actors have asymmetric information within dynamically evolving markets and environments. However, preferences for alternative aid modalities are likely to vary across different population groups, even among members of the same household. This paper explores intrahousehold differences in preferences for different modalities of aid, whether cash, in-kind, or a hybrid of the two, among internally displaced households in Sudan. We also examine how decision-making power and agency shape gender-differentiated preferences for the modality of aid the household receives.

Aid in the form of cash remains the most preferred option, preferred by about half of the sample of spouses in displaced households. The other half of spouses preferred either in-kind aid or hybrid options. However, we find significant intrahousehold differences in aid modality preferences across spouses in the same household. Despite some important differences across states, on average, relative to their husbands, a 7 percentage points higher share of wives report a preference for aid provided in-kind. Spousal agency and control over decisions related to who decides on how the household will use the humanitarian aid received affects what aid modality is preferred. For example, those spouses (especially women) who are in control of decisions in the household related to what to do with any aid received are more likely to prefer cash transfers, while those spouses who are not in charge of making those decisions prefer in-kind transfers over cash. We also find suggestive evidence that respondents who lack access to market and self-control or associated commitment devices to save any aid received are more likely to prefer in-kind transfers. Wives are more likely to respond to and value access to the market more than their husbands, as reflected in their aid modality preference patterns. These findings show that gender-differentiated intrahousehold preferences for the type of aid the household receives need to be taken into account in designing and programming humanitarian assistance, as autonomy in decision-making within the household can shape preferences for alternative aid modalities.

Considering an understudied population and context, we highlight important gendered differences in preferences for different types of aid within beneficiary households, evidence that can inform the design and delivery of humanitarian services in Sudan and similar settings. Despite the growing recognition of intrahousehold differences in preferences for various services and technologies (e.g., Miller and Mobarak 2013; Gulati et al. 2024; Gartaula et al. 2024) and public policies (e.g., Delaney and O'Toole 2008; Munro 2018), variation in intrahousehold preferences for humanitarian assistance remains understudied.

Our findings offer important lessons and contribute to the debate on the choice of modality in delivering humanitarian assistance to those in need in fragile and conflict-affected settings.

Despite the novel contributions of the study, this paper suffers from at least two limitations.

- We rely on self-reported aid modality preferences. In the fragile contexts of the three study states, we could not conduct an incentive-compatible choice exercise, as conducting such an exercise was impossible given the current security situation. However, the study population of internally displaced households is familiar with the different aid modalities considered as they are all beneficiaries of WFP assistance, with some receiving aid in-kind, while others receive cash. We do not find systematic differences across households exposed to these modalities.
- The decision-making roles of husbands and wives within the household are also self-reported and may suffer from some reporting biases. Emerging studies show substantial spousal disagreement and discordance about self-reported roles in household decision-making among men and women (Anderson et al. 2017; Acosta et al. 2020; Annan et al. 2021; Ambler et al. 2021; Van Campenhout et al. 2023).

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ANNEX—SUPPLEMENTARY TABLES

Annex Table 1 Expanded modality preference, share of respondents

Modality Preference	All	Women	Men
Cash	0.596 (0.490)	0.569 (0.495)	0.624 (0.484)
Digital cash	0.118 (0.322)	0.101 (0.302)	0.134 (0.340)
In-kind	0.219 (0.414)	0.262 (0.439)	0.177 (0.382)
Value vouchers	0.009 (0.093)	0.010 (0.100)	0.007 (0.083)
Indifferent as to modality	0.058 (0.233)	0.058 (0.233)	0.057 (0.232)
Observations	2,550	1,275	1,275

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Note: Standard errors in parentheses.

Annex Table 2 Modality preference and autonomy in decision-making, by state

	(1) In-kind	(2) Cash	(3) Hybrid
Gender (women =1)	0.065*** (0.018)	-0.035 (0.024)	-0.030* (0.016)
Decision-maker =2, partner/spouse	0.048** (0.022)	-0.013 (0.028)	-0.035 (0.021)
Decision-maker =3, joint decision	0.008 (0.023)	-0.063** (0.030)	0.054** (0.025)
Decision-maker =4, other HH members	0.021 (0.065)	-0.080 (0.073)	0.061 (0.071)
State = 2, Gedaref	-0.066 (0.041)	0.173*** (0.034)	-0.108*** (0.031)
State = 3, Kassala	-0.148*** (0.045)	0.165*** (0.043)	-0.017 (0.030)
Constant	0.217*** (0.035)	0.496*** (0.038)	0.287*** (0.044)
R-squared	0.02	0.03	0.02
Observations	2,525	2,525	2,525

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Note: This table reports results from a simple OLS regression of gender and decision-making on modality preferences. The decision-making variable is a categorical variable capturing responses of both primary and secondary respondents on who decides how to use humanitarian assistance. The base case for this variable is "myself". The state variable is a categorical variable. The base state is Blue Nile state. Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Annex Table 3 Concordance between couples in their reports on who in their household makes the decisions on the use of humanitarian assistance

Status	Percentage of total couples in sample
Concordant	79.8
Discordant	20.2

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Note: Missing values, refusals, and other household members removed, N=1,252.

Annex Table 4 Agreement and disagreement about who says they decide how to use humanitarian assistance, percent of couples

Spouse (Wife)	Primary Respondent (Husband)		
	Joint Decision	Self	Spouse
	45.3	4.2	2.6
	Self	2.3	3.8
	Spouse	2.8	19.3
			4.4

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Note: Missing values, refusals, and other household members removed, N=1,252.

Annex Table 5 Aid modality preferences and confidence in saving cash and storing produce of women in displaced households with and without a husband resident

	In-Kind	Cash	Hybrid
Woman with husband resident in the household, 0/1	0.098*** (0.026)	-0.037 (0.033)	-0.060** (0.028)
Decision-maker = 2, spouse	0.029 (0.037)	-0.030 (0.039)	0.001 (0.031)
Decision-maker = 3, joint decision	-0.026 (0.025)	-0.045 (0.031)	0.071*** (0.026)
Decision-maker = 4, other HH members	-0.029 (0.035)	-0.056 (0.051)	0.085* (0.050)
Market access in past 30 days, 0/1	0.002 (0.023)	0.019 (0.025)	-0.021 (0.023)
Slightly confident in saving cash (code 2)	-0.007 (0.035)	0.017 (0.039)	-0.011 (0.034)
Moderately confident in saving cash (3)	-0.067 (0.043)	0.006 (0.042)	0.062 (0.040)
Very confident in saving cash (4)	-0.156*** (0.043)	0.186*** (0.042)	-0.030 (0.037)
Extremely confident in saving cash (5)	-0.231*** (0.049)	0.173*** (0.051)	0.057 (0.044)
Slightly confident in storing in-kind goods (code 2)	0.049 (0.032)	-0.039 (0.042)	-0.010 (0.038)
Very confident in storing in-kind goods (4)	0.078** (0.039)	-0.057 (0.044)	-0.021 (0.039)
Extremely confident in storing in-kind goods (5)	0.199*** (0.049)	-0.126*** (0.046)	-0.073* (0.041)
Constant	0.163*** (0.034)	0.536*** (0.045)	0.301*** (0.038)
R-squared	0.06	0.03	0.02
Observations	1,949	1,949	1,949

Source: Authors' calculations based on 2025 Sudan Internally Displaced Household Survey data.

Note: This table reports results from a simple OLS regression of primary vs. secondary women respondents, market access, confidence in storage, and decision-making on modality preferences. The couple variable binary variable taking the value of 1 for women interviewed as secondary respondents (i.e., married women) and 0 for women interviewed as primary respondents (i.e., single-headed female household). The decision-making variable is a categorical variable capturing responses of both primary and secondary respondents for who decides how to use humanitarian assistance, the base = "myself". Market access is binary, taking the value of 1 if household was able to access market in the last 30 days, and 0 otherwise. Confidence in storing in-kind and in storing in-cash are categorical variables with base = "not confident at all". Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

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