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THE IMPACT OF REMITTANCES AND GENDER ON HOUSEHOLD EXPENDITURE PATTERNS: EVIDENCE FROM GHANA

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In recent decades international migration and remittance flows from migrants have increased substantially. In 2005 the recorded remittances sent home by migrants originating from developing countries reached $188 billion, and this number is expected to increase to $199 billion in 2006 (World Bank 2006b). Remittances represent an important category of capital transfers from North to South and have proven to be a crucial tool for poverty alleviation (for review of the impact of remittances on poverty at the household level, see World Bank 2006a). Women form an increasing part of the migratory movements—almost half of today's migrant population is female (UNDP 2005)—and there are indications that the character of female migration is changing: more women are migrating for employment reasons instead of following their male relatives (United Nations 2005).

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Migrants who remit to their origin households may have a greater say over the allocation of origin-household spending than if they had stayed at home, by virtue of their increased financial contribution to the household. However, since migrants are not physically present in the origin household, typical principal-agent problems may limit the extent to which they can influence or monitor household spending. The same arguments apply to the individuals who remain in households where a principal earner has migrated: these individuals may enjoy greater independence and influence in decisions on household expenditures, or the migrants may have a greater say in household expenditure decisions because of a greater financial contribution to the household, subject to the principal-agent issues mentioned above. In sum, it is expected that migration and remittances alter intra-household bargaining patterns and, in turn, affect household expenditure allocations.

This chapter pulls together the strands of literature on intra-household allocation and remittances to examine, using data from Ghana, how household budget allocations are affected by the sex of the individual who sends remittances and by the sex of the household head who receives remittances.

The remainder of the chapter is organized as follows. The following section presents relevant research on the determinants of and motivations for remittances, with particular emphasis on the differences between men and women. It also examines the most salient results from the intra-household expenditure literature. The second section describes the data that are employed. The third section describes the econometric approach used, and the fourth presents the results of the regression analysis. A final section concludes.

Motivations to Remit and Intra-Household Models of Expenditures: A Quick Review of Research

The literature on the determinants of remittances is particularly important for the purpose of this chapter, because there is growing consensus that remittance flows are not driven solely by individual motives, but rather are explained as part of familial intertemporal contracts between the migrant and the remittance receivers (Lucas and Stark 1985; Stark and Lucas 1988; Rapoport and Docquier 2005).

The major focus of literature examining the motivation for remittances is whether individuals remit because of altruistic motives or because of self-interest. Only a subset of these studies disaggregates by the gender of the remitter. One of the earliest studies to do so was Hoddinott (1994), who shows, using data from

western Kenya, that the remittances of sons respond to their parents' inheritable assets, while those of daughters do not. Using data from the Dominican high-lands, de la Brière et al. (2002) document that remittances from female migrants respond strongly to the number of lost working days by parents (consistent with altruistic motives for remitting), while remittances from male migrants are unaf-fected by this variable—unless a male migrant is the sole migrant in the house-hold. However, their results also indicate that remittances sent as an investment to increase future inheritance are gender neutral. They conclude that insurance is the main motive to remit for international female migrants. These results are in line with the findings from a study on financial support to parents that was conducted in Taiwan (China), which shows that daughters respond to parents' special needs rather than ordinary needs and function as an insurer of last resort, while sons do not (Lee et al. 1994). Finally, a study by Vanwey (2004) investigates gender differ-ences in remittance motives in Thailand. She concludes that female remitters are more motivated by altruism than are male remitters.

Beyond the motivation for remittances, male and female remitters potentially may have different preferences about the type of expenditures that their remit-tances should support. In her Mexican case study, de La Cruz (1995) finds that male migrants, to a greater degree than female migrants, intend to return to Mexico to live permanently in the future; for this reason, their remittances are directed toward personal investments such as land, housing, agricultural production, and cattle. Female migrants also remit for investment purposes, but it appears that their investments are more targeted to support origin households with education and business opportunities rather than personal educational and business invest-ments to facilitate a future return.

Along the lines of these findings, a descriptive study by the International Orga-nization for Migration (IOM), using data from Moldova, finds that substantially more women than men remit funds to pay for education, health, furniture, and loans. Female migrants from Moldova state that they intend their remittances to be spent on current expenses (food, clothes, commodities, and household equip-ment) and special expenses (education, health, furniture, and loans); male migrants prefer to direct their remittances to investment in housing, cars, and consumer durables (IOM 2005).[1]

In sum, the tentative conclusion emerging from the literature is that female remitters function as insurers for the receiving families and prefer their remit-tances to be spent on education and health, while male remitters tend to prefer investments in housing and other assets.

An important question, then, is whether migrants' preferences for the use of their remittances are respected by origin households. If male and female remitters

have systematically different preferences for the use of remittances, it is reasonable to expect that the identity of the individual receiving the remittances—and, more broadly, the demographic composition of the household receiving the remittance and male-female power relations in the household—may also influence how remittances are spent.

Thus the findings of the large literature on intra-household expenditure patterns are quite relevant. In general, this research rejects the traditional *unitary household model,* which assumes that a household has a single preference function and fully pools resources; instead, it suggests that there are differences in preferences among household members and that distribution of resources depends on individuals' bargaining power within the household (Quisumbing 2003; for reviews, see Haddad, Hoddinott, and Alderman 1997; Strauss and Thomas 1995). A key finding of the intra-household expenditure literature is that allocations toward education, health, and nutrition increase with the number of resources controlled by women (Quisumbing 2003).

Quisumbing and Maluccio (2000), using data from Bangladesh, Ethiopia, Indonesia, and South Africa, conclude that the most consistent effect across countries of an increased percentage of resources controlled by women at the time of marriage is an increase in expenditure shares for education.[2] This finding holds for all countries except for Ethiopia. Similar studies in rural Bangladesh find that an increase in women's assets has a positive effect on expenditures for children's clothing and education (Hallman 2000; Quisumbing and de la Brière 2000).[3]

This behavior by women may be eminently rational. Since women often marry at an earlier age than men and also have longer life expectancies, on average they outlive their husband. Consequently, they choose to invest in education of their children, as they rely on them for old-age support to a greater extent than men (Quisumbing and Maluccio 2000). Moreover, Guyer (1997) claims that, in societies where assets that enable consumption smoothing are controlled by men, investments in human capital may be an attempt by females to smooth consumption over time.

Regarding health expenditures and outcomes, various studies published during the 1980s and 1990s conclude that, on average, women spend a greater part of their income on health care for children than men (see Dwyer and Bruce 1988; García 1991; Guyer 1997; Katz 1992; Kennedy 1991; Thomas 1990, 1994; Thomas and Chen 1994). For example, Thomas (1994) finds that control of nonlabor income by women is associated with increased expenditures on health care in Brazil, Ghana, and the United States. In the case of Brazil, Thomas (1990) finds that the marginal impact of female-controlled income on child survival is 20 times that of male-controlled income. A more recent study by Hallman (2000) uses data

from Bangladesh and finds that assets controlled by women are associated with better health outcomes for girls. A more recent study by Duflo (2003) shows that pensions received by women in South Africa have a larger impact on measures of weight-for-height and height-for-age of girls, but little effect on those of boys. She finds no effect for pensions received by men.

With respect to expenditure on nutrition, Haddad and Hoddinott (1995), using the Côte d'Ivoire Living Standards Survey, show that share of income controlled by females has a positive and significant effect on the budget share spent on food. Drawing on Demographic and Health Survey data from Bangladesh, India, Nepal, and Pakistan, Smith and Byron (2005) conclude that increases in women's decision-making power relative to that of men are associated with improved nutritional well-being of children.

To our knowledge, only one study has examined whether the impact of remittances on health and education outcomes of children in the receiving household depends on the bargaining power of women in the household. De and Ratha (2005), using female head of household as a proxy for bargaining power, show that remittances in Sri Lanka have a positive impact on health and education of the children when the household head is female, but not when the household head is male. If the household head is male, remittances have a positive impact on asset accumulation.

Data

This chapter uses data from the Ghana Living Standards Survey round four (GLSS 4), collected nationwide by the Republic of Ghana Statistical Service between April 1998 and March 1999. The data set comprises 5,998 households and is representative both at the national level and for urban and rural areas. Although the survey is comprehensive in character and includes detailed information on households' expenditure patterns, it is not a specialized survey of remittances or migration. As such, it collects only basic information on current remitters' characteristics: sex, relationship to household head, and place of residence. Neither does it contain comprehensive data on migrants; only migrants who remit (and whose remittances are declared by the receiving household) are captured by the survey. The lack of data on migrants implies that we cannot observe the effect of migration on expenditure patterns. However, we can observe the impact of remittances,[4] since the data set does contain relatively good data on remittances, including amount remitted in cash and in kind and frequency with which remittances are received. Furthermore, the expenditure data included in the survey are of high quality (for more information on the data set, see Republic of Ghana Statistical Service 1999).

Studies on Ghana show that both cash and in-kind remittances are important (Quartey 2005). For this reason, the definition used in this chapter for remittances includes cash, food, and other goods (nonfood items). Remittance-receiving households are defined as households receiving remittances from within Ghana, from abroad, or from both. We make a distinction between remittances received from Ghana (internal remittances) and remittances received from abroad (international remittances), since previous literature suggests that internal and international remittances differ both in frequency and amount (see López Córdoba 2005; Mora and Taylor 2004; Adams 2006a, 2006b).

Of the 5,998 households included in the sample, 41 percent of households receive remittances: 35 percent of households receive remittances from Ghana, 8 percent receive remittances from abroad, and 3 percent receive both international and internal remittances. In terms of gender, 32 percent of households in the sample are female headed.

Table 5.1 shows descriptive statistics from the Ghana household survey, disaggregated by the six groups of interest for the study: female-headed households not receiving remittances (14.3 percent), female-headed households receiving remittances from Ghana (17.1 percent), female-headed households receiving remittances from abroad (2.2 percent), male-headed households not receiving remittances (44 percent), male-headed households receiving remittances from Ghana (18.6 percent), and male-headed households receiving remittances from abroad (3.5 percent).

Methodology

The purpose of this chapter is to test whether remittance-receiving households in which women have stronger bargaining power have different expenditure patterns than households in which women have less bargaining power, and whether the sex of the individual sending the remittances matters as well.

The first challenge is to find a variable that captures intra-household decision-making power. GLSS 4 lacks the type of predetermined, exogenous variables typically used to measure decision-making power and women's empowerment (for example, wealth upon marriage). The best proxy available is the sex of the household head; since the household head is defined as the person who provides most of the needs of the household, we expect him or her to be in a strong bargaining position within the household (Republic of Ghana Statistical Service 1999).[5]

A general methodological issue well recognized in the literature on remittances is that comparisons of remittance-receiving and nonreceiving households are likely to produce biased estimates if receivers of remittances differ systematically from nonreceivers along observable and nonobservable dimensions (see Acosta 2006;

Table 5.1. Descriptive Statistics

Variable	Female-headed households			Male-headed households		
	Not receiving remittances	Receiving remittances from Ghana	Receiving remittances from abroad	Not receiving remittances	Receiving remittances from Ghana	Receiving remittances from abroad
Household size	3.808	3.558	4.032	4.727	4.356	4.284
Age of household head (years)	44.886	48.693	47.960	42.857	46.602	44.077
Number of males >15	0.518	0.428	0.652	1.406	1.342	1.415
Number of females >15	1.573	1.502	1.854	1.177	1.098	1.161
Girls < 5	0.277	0.282	0.280	0.419	0.377	0.313
Boys < 5	0.274	0.258	0.124	0.420	0.355	0.286
Number of members >15 with primary education	0.298	0.266	0.412	0.329	0.322	0.247
Number of members >15 with junior secondary school	0.613	0.554	0.793	0.802	0.789	0.862
Number of members >15 with secondary school	0.078	0.069	0.114	0.060	0.052	0.112
Number of members >15 with university education	0.005	0.004	0.010	0.014	0.010	0.051
Head of household is of Asante ethnicity (1 = yes)	0.200	0.257	0.280	0.139	0.172	0.205
Head of household is married (1 = yes)	0.338	0.354	0.437	0.842	0.784	0.841
Total household expenditure (GHC millions)	1.395	1.456	1.854	1.433	1.332	1.860
Number of observations	857	1,026	134	2,660	1,113	208

Source: Authors' calculations based on Ghana Living Standards Survey (GLSS) round four.

Note: N = 5,998 households; 146 households receive both internal and international remittances. These are counted as receiving internal remittances. In 1999, US$1.00 = 2,394 Ghanaian cedis (GHC).

Adams 2006a; De and Ratha 2005; Yang and Martínez 2005). There are multiple ways to correct for nonrandom selection, including difference-in-difference estimation (DID), an instrumental variable (IV) approach, and propensity score matching (PSM). McKenzie et al. (2006) use the point estimates of the impact of migration on income from a natural experiment in New Zealand as a benchmark to compare how well these three correction approaches perform; they find that the IV approach with a good IV is the best method, followed by PSM and DID. Using a poor IV approach proved to generate substantially more biased results than those produced by ordinary least squares (OLS).

For purposes of this chapter, feasible methods are restricted by data availability. In the absence of panel data, the DID approach is not possible. As an alternative, the IV approach was used initially, with the age of the household head, an indicator for previous migration experience by any household member (returned migrant), and whether or not the household head was of Asante ethnicity as IVs.[6] Jointly, these three variables were partially correlated with the instrumented variable—that is, receiving remittances from within Ghana or from abroad. It is difficult to guarantee, however, that these variables are not directly correlated with the dependent variable—that is, household budget allocations. In fact, there are several plausible reasons why we might expect these IVs to be highly correlated with budget allocations.[7] For this reason, we cannot use these IVs and therefore do not report the results using them. Other IVs commonly used in the remittances literature, such as distance that separates remitters and receiving households or average income of the remitter's place of residence, are not available in the data set.[8] In sum, given that the data set does not include any good IVs and based on the conclusions of McKenzie, Gibson, and Stillman (2006), we fear that the use of the available IVs may do more harm than good for the analysis.

The remaining option is to use PSM, but this methodology also proved infeasible for several reasons. As mentioned, there are six comparison groups in this study. Thus we cannot proceed with the standard approach of matching one group that receives treatment with another group that does not. In the case of multiple treatments, PSM requires using a multinomial approach, but Imbens (1999) shows that, in such instances, the effect of the treatments cannot be identified unless an instrument is used. In other words, since we are lacking a good IV, the PSM approach is not feasible either. As a consequence of the limitations imposed by data availability, our preferred specification is a standard fractional logit model without instruments.

The choice of functional form to model expenditure shares depends on the degree of emphasis placed on various properties that one desires the function to possess. For purposes of this chapter, the functional form needs to meet the following criteria: (a) it must be suitable for multiple types of goods; (b) it should allow for increasing, decreasing, and constant marginal propensities to spend over a wide

range of expenditure levels; and (c) it should satisfy the additivity criterion—that is, the sum of the marginal propensities for all goods should equal unity (Adams 2006a). In the light of these considerations, we use an adjusted Working-Leser curve as specified in Case and Deaton (2002) and Bhalotra and Attfield (1998).

Our six dependent variables reflect the six categories of household expenditure collected in GLSS 4. Those are the fraction of total expenditure spent on food, consumer and durable goods, housing, education, health, and other items (for more information on the dependent variables included in the study, see table 5.2). The study uses an approach similar to that used in Adams (2006a) to estimate the determinants of expenditure shares among Ghanaian households.

We specify the model of the form:

$$w_{ih} = \alpha_i + \beta_i \log \frac{x_h}{n_h} + \varepsilon_i \log n_h + \theta_i z_h + u_{ih}, \tag{5.1}$$

where w_{ih} is the share of the budget devoted to expenditure category i by household h, x_h is total household expenditure, n_h is household size (that is, x_h/n_h is per capita expenditure), z_h is a vector of household characteristics that may affect expenditure behavior, and u_{ih} is an error term.

Since our dependent variables are bound between 0 and 1 (being the percentage of total expenditure spent on good i), we model E $(w_{ih}|X)$ as a logistic function: E $(w_{ih}|X) = \exp(X\beta)/[1 + \exp(X\beta)]$, where w_{ih} represents the fraction of total expenditure spent on each of our six expenditure categories, and X is a

Table 5.2. Description of Dependent Variables

Variable	Description	Examples
Food	Purchased food	Maize, bread, cassava, meat
	Nonpurchased food	Food from own production, gifts, donations
Consumer and durable goods	Consumer goods	Clothing and footwear, fabric
	Household durables	Annual use value of stove, refrigerator, furniture
Housing	Annual use value	Estimated from rental payments or imputed values
Education	Educational expenses	Books, school supplies, uniforms, registration fees
Health	Health expenses	Doctor and dentist fees, medicine, hospitalization
Other	Utilities	Water, gas, electricity, telephone
	Transport	Bus and taxi fees, gasoline, postage, fax
	Remittance expenses	Expenses on remittances

Source: Authors' calculations based on GLSS 4.

matrix of independent and control variables. This model guarantees that predicted values of w_{ih} fall between 0 and 1 (for more details on the rationale for using the fractional logit model, see Papke and Wooldridge 1996; Wooldridge 2002).

The following basic equation serves as a point of departure for the analysis:

$$w_{ijh} = \alpha_{ij} + \beta_{0ij} RR\_INT_{jh} + \beta_{1ij} RR\_EXT_{jh} + \beta_{ik} \log \frac{x_{jh}}{n_{jh}}$$

$$+ \varepsilon_{ij} \log n_{jh} + \theta_{ij} z_{jh} + u_{jih} , \tag{5.2}$$

where j defines the gender of the household head (male or female), w_{ih} is defined as above, RR_INT is a dummy variable that equals unity for those households receiving internal remittances (from Ghana) and zero for households not receiving internal remittances, and RR_EXT represents a dummy variable that equals unity for households receiving remittances from abroad and zero for households not receiving international remittances.

To analyze the impact of the gender of the household head on expenditure patterns in remittance-receiving households, we run separate regressions for female-headed households and male-headed households.

The second part of our analysis asks whether or not the sex of the remitter is associated with differences in household expenditure allocations. In this analysis, we use the remitter as the unit of analysis instead of the household, and thus we focus only on households receiving remittances. In the data set, 4,011 individuals are identified as sending remittances to 2,481 households. The advantage of this approach is that we do not have to create multiple summary variables that classify the different cases that would be present in households that receive remittances from multiple individuals. By using remitters as the unit of analysis, we examine whether or not, on average, the households to which women send remittances allocate their expenditures differently than the households to which men send remittances.

The dependent variables, as above, are household expenditure shares of the household receiving remittances from the individual remitter. Household characteristics of the receiving household are included in the analysis; because these characteristics will be common across all individuals remitting to the same household, we cluster by household and calculate robust standard errors. We divide each weight by the number of remitters to the household so that the weights add up to the original population size. The final sample of remitters is 4,011 individuals, of which 1,617 (40 percent) are female and 2,394 (60 percent) are male.

Assuming that the remitter has a specific preference for how the remittances should be spent, the relation between the remitter and the receiving household could be framed as a classical *principal-agent problem,* where the remitter (the principal) desires effective use of the remittances, and the receiver of the remittances

(the agent) actually allocates the remittances. Through this lens, the extent to which the remitter is able to enforce his or her contract with the receiver of the remittances becomes important for the analysis (for a detailed discussion and noncooperative decision making and migration, see Chen 2006). In other words, even if male and female remitters have different preferences for the use of remittances, those preferences may not be realized because of principal-agent problems.

In order to deal with this issue, we introduce new variables into the analysis to capture the severity of principal-agent problems: the remitter's relationship to the household head, the country of residence of the remitter, and the frequency of remitting.[9] (See the next section for a more detailed discussion of these proxies for ability to monitor and control the origin household's use of expenditures.) The sex of the remitter may matter as well; thus we also interact the sex of the remitter with the relationship to the head of the household and the location of the remitter.[10]

Results

Initially the budget allocation among the different expenditure categories shows little difference among the various types of households. Table 5.3 shows descriptive statistics on average budget shares allocated to the six expenditure categories for the six comparison groups described in the previous section. Overall, the share of expenditure allocated to each category is surprisingly similar for the different groups. Households receiving remittances from abroad (both female and male), however, seem to have a somewhat different expenditure pattern—with smaller expenditure shares allocated to food. Comparing female-headed households in each group with their male counterparts, we observe that female-headed households, on average, allocate greater resources than male-headed households to education and health, while male-headed households allocate greater resources to consumer and durable goods. These findings coincide with those in the literature on intra-household bargaining.

Table 5.4 shows descriptive statistics on average budget shares by the sex of remitter in remittances-receiving households allocated to the six expenditure categories by sex of the remitter. As indicated in the table, the differences in expenditure shares between households that receive remittances from female and male remitters, respectively, seem to be extremely small.

Impact of Remittances on Expenditures in Female- and Male-Headed Households

Table 5.5 shows coefficients from the fractional logit regression for the determinants of expenditure shares, with the coefficients expressed in odds ratios. A coefficient larger (smaller) than 1 indicates that the corresponding variable is associated

Table 5.3. Average Budget Shares by Sex of the Household Head and Status of Receiving Households in Ghana, 1998–99

Expenditure Category	FHH[1] not receiving remittances	FHH[1] receiving remittances from Ghana	FHH[1] receiving remittances from abroad	MHH[1] not receiving remittances	MHH[1] receiving remittances from Ghana	MHH[1] receiving remittances from abroad
Food	0.6100	0.6080	0.5330	0.5900	0.6000	0.5550
Consumer and durable goods	0.1810	0.1730	0.2170	0.2080	0.2030	0.2200
Housing	0.0240	0.0270	0.0250	0.0240	0.0250	0.0260
Education	0.0420	0.0430	0.0600	0.0350	0.0330	0.0440
Health	0.0360	0.0430	0.0400	0.0350	0.0370	0.0350
Other	0.1070	0.1060	0.1250	0.1080	0.1020	0.1200
Total	1.00	1.00	1.00	1.00	1.00	1.00
Number of observations	857	1,026	134	2,660	1,113	208

Source: Authors' calculations based on GLSS 4.

Note: 1. FHH = female-headed households, MHH = male-headed households.

Robust standard errors are used to account for the primary sample unit (PSU) of the survey methodology.

**Table 5.4. Average Budget Shares, by Sex of Remitter in
              Remittance-Receiving Households in Ghana, 1998–99**

Expenditure category	Female remitter	Male remitter
Food	0.6090	0.6069
Consumer and durable goods	0.1786	0.1847
Housing	0.0297	0.0270
Education	0.0362	0.0394
Health	0.0429	0.0402
Other	0.1036	0.1019
Total	1.00	1.00
Number of observations	1,671	2,340

Source: Authors' calculations based on GLSS 4.

with an increase (decrease) in the share of expenditure for each type of consumption good.

The expenditure equations perform reasonably well for both male- and female-headed households. In general, there are strong impacts of the log of total expenditure and its square on the expenditures on food, consumer and durable goods, and housing (the income elasticities for per capita income for the six categories of expenditure by sex of the household head are presented table 5.6). Household size also matters: larger households tend to spend a larger share on education and consumer or durable goods and a smaller share on food and housing.

As expected, having a larger proportion of girls and boys under age five increases the share of expenditures devoted to food and health, while decreasing the share of expenditures on education. The proportion of household members who have completed junior secondary school and senior secondary school also affects expenditure patterns: it decreases expenditure allocations to food, while increasing the share to consumer durables and education. The proportion of household members who have completed university has similar effects, but there is no impact on the share of expenditures going to education. The location dummies are consistently significant, as indicated in table 5.5.

The coefficients discussed above by and large have quite similar values for male- and female-headed households. The central question motivating this analysis, however, is whether remittances have a differential impact on expenditure patterns in male- and female-headed households. The evidence reported in table 5.5 suggests that international remittances consistently affect household expenditure shares in female-headed households, but have no such effect in male-headed households. In female-headed households, international remittances lower the

Table 5.5. Fractional Logit Odds Ratio Coefficients, by Expenditure Type and Gender of Household Head

Variable	Food		Consumer and durable goods		Housing	
	Male-headed household	Female-headed household	Male-headed household	Female-headed household	Male-headed household	Female-headed household
Receive internal remittances	0.987 (0.020)	0.965 (0.027)	1.019 (0.024)	0.978 (0.029)	1.016 (0.023)	0.972 (0.022)
Receive international remittances	0.96 (0.044)	0.774 (0.033)***	1.053 (0.049)	1.223 (0.055)***	1.028 (0.050)	1.173 (0.049)***
log_total expenditure per capita	5.312 (2.487)***	2.719 (1.583)*	0.181 (0.095)***	0.797 (0.478)	0.055 (0.026)***	0.053 (0.028)***
log_total expenditure per capita squared	0.938 (0.016)***	0.964 (0.020)*	1.07 (0.020)***	1.013 (0.022)	1.082 (0.020)***	1.079 (0.020)***
log_household size	0.849 (0.029)***	0.778 (0.030)***	1.057 (0.033)*	1.251 (0.055)***	0.551 (0.018)***	0.48 (0.017)***
Age of household head	1.006 (0.001)***	1.011 (0.001)***	0.99 (0.001)***	0.986 (0.001)***	1 (0.001)	1.002 (0.001)**
Proportion of males >15 years	1.118 (0.083)	1.025 (0.088)	0.845 (0.061)**	1.085 (0.111)	1.195 (0.088)**	1.167 (0.093)*
Proportion of females >15 years	0.994 (0.062)	0.824 (0.070)**	1.04 (0.079)	1.248 (0.093)***	1.126 (0.070)*	1.308 (0.096)***
Proportion of girls <5 years	1.242 (0.111)**	1.287 (0.151)**	1.073 (0.102)	1.137 (0.114)	0.739 (0.084)***	0.908 (0.059)
Proportion of boys <5 years	1.206 (0.103)**	1.319 (0.148)**	1.053 (0.087)	1.261 (0.152)*	0.718 (0.057)***	0.967 (0.098)

Proportion of family members who have completed primary school	1.008 (0.059)	0.936 (0.078)	0.995 (0.055)	1.087 (0.107)	0.874 (0.064)*	0.946 (0.061)
Proportion of family members who have completed junior secondary school	0.885 (0.042)**	0.835 (0.049)***	1.117 (0.060)**	1.262 (0.076)***	1.026 (0.043)	1.071 (0.060)
Proportion of family members who have completed senior secondary school	0.671 (0.053)***	0.515 (0.096)***	1.236 (0.128)**	1.739 (0.275)***	1.14 (0.069)**	1.092 (0.132)
Proportion of family members who have completed university	0.402 (0.115)***	0.098 (0.049)***	1.357 (0.250)*	6.068 (4.731)**	3.019 (1.212)***	1.641 (1.596)
Head of household is married (1 = yes)	0.862 (0.033)***	1.082 (0.036)**	1.212 (0.054)***	0.913 (0.032)***	0.984 (0.043)	0.986 (0.027)
Location 2 (urban coastal)	1.063 (0.087)	1.15 (0.101)	1.024 (0.061)	0.973 (0.077)	0.483 (0.048)***	0.372 (0.027)***
Location 3 (urban forest)	1.11 (0.084)	1.21 (0.102)**	1.262 (0.083)***	1.151 (0.088)*	0.463 (0.030)***	0.46 (0.029)***
Location 4 (urban savannah)	1.381 (0.142)***	1.564 (0.210)***	1.075 (0.088)	0.978 (0.123)	0.591 (0.056)***	0.484 (0.037)***
Location 5 (rural coastal)	1.368 (0.119)***	1.314 (0.119)***	1.122 (0.074)*	1.009 (0.078)	0.367 (0.026)***	0.363 (0.022)***
Location 6 (rural forest)	1.396 (0.101)***	1.409 (0.114)***	1.21 (0.065)***	1.226 (0.091)***	0.3 (0.020)***	0.299 (0.018)***
Location 7 (rural savannah)	1.757 (0.148)***	1.644 (0.167)***	1.089 (0.081)	1.119 (0.098)	0.303 (0.020)***	0.253 (0.017)***
Head of household is of Asante ethnicity	0.94 (0.039)	1.055 (0.049)	1.014 (0.042)	0.899 (0.036)***	1.06 (0.040)	1.011 (0.044)
Number of observations	3,981	2,017	3,981	2,017	3,981	2,017
Deviance	272.11	115.47	196.73	75.3	22.29	7.92

(Table continues on the following page)

Table 5.5. Fractional Logit Odds Ratio Coefficients, by Expenditure Type and Gender of Household Head (Continued)

Variable	Health		Education		Other	
	Male-headed household	Female-headed household	Male-headed household	Female-headed household	Male-headed household	Female-headed household
Receive internal remittances	1.046	1.173	1.01	1.115	0.975	0.984
	(0.050)	(0.066)***	(0.065)	(0.067)*	(0.036)	(0.042)
Receive international remittances	1.076	1.211	1.122	1.137	0.965	1.145
	(0.111)	(0.130)*	(0.119)	(0.105)	(0.045)	(0.075)**
log_total expenditure per capita	1.062	4.004	1.55	0.683	1.114	0.53
	(1.073)	(4.319)	(2.135)	(1.355)	(0.617)	(0.427)
log_total expenditure per capita squared	1.000	0.956	0.981	1.015	1.001	1.025
	(0.036)	(0.037)	(0.049)	(0.074)	(0.020)	(0.030)
log_household size	0.988	0.983	3.411	2.484	1.017	1.166
	(0.068)	(0.082)	(0.268)***	(0.202)***	(0.046)	(0.063)***
Age of household head	1.004	1.001	1.002	0.996	0.999	0.994
	(0.002)**	(0.002)	(0.002)	(0.003)	(0.001)	(0.002)***
Proportion of males >15 years	0.821	0.923	0.259	0.448	0.985	1.049
	(0.151)	(0.221)	(0.059)***	(0.124)***	(0.140)	(0.140)
Proportion of females >15 years	1.321	0.919	0.259	0.147	1.07	1.649
	(0.267)	(0.170)	(0.077)***	(0.038)***	(0.100)	(0.184)***
Proportion of girls <5 years	1.593	1.112	0.046	0.112	1.078	1.025
	(0.281)***	(0.230)	(0.012)***	(0.030)***	(0.155)	(0.214)
Proportion of boys <5 years	2.05	1.617	0.062	0.056	0.942	0.782
	(0.370)***	(0.361)**	(0.017)***	(0.016)***	(0.105)	(0.167)
Proportion of family members who have completed primary school	1.135	0.745	1.029	1.589	1.036	1.103
	(0.187)	(0.117)*	(0.276)	(0.379)*	(0.091)	(0.137)

Proportion of family members who have completed junior secondary school	1.003 (0.089)	0.992 (0.137)	2.065 (0.421)***	2.1 (0.419)***	1.014 (0.053)	0.94 (0.078)
Proportion of family members who have completed senior secondary school	0.494 (0.110)***	0.675 (0.200)	11.297 (4.211)***	4.369 (1.612)***	1.112 (0.146)	1.41 (0.390)
Proportion of family members who have completed university	0.672 (0.424)	0.214 (0.289)	2.959 (2.481)	2.871 (3.918)	2.036 (0.719)**	6.477 (3.224)***
Head of household is married (1 = yes)	1.025 (0.087)	0.996 (0.080)	0.912 (0.121)	0.982 (0.068)	1.101 (0.059)*	0.958 (0.044)
Location 2 (urban coastal)	1.132 (0.185)	1.016 (0.213)	0.734 (0.102)**	0.689 (0.100)**	1.048 (0.081)	1.182 (0.112)*
Location 3 (urban forest)	1.117 (0.166)	0.966 (0.173)	0.522 (0.070)***	0.646 (0.082)***	0.832 (0.064)**	0.83
Location 4 (urban savannah)	0.787 (0.115)	0.714 (0.183)	0.379 (0.056)***	0.354 (0.059)***	0.738 (0.082)***	0.846 (0.085)*
Location 5 (rural coastal)	1.249 (0.185)	1.093 (0.205)	0.435 (0.057)***	0.529 (0.072)***	0.669 (0.055)***	0.94 (0.106)
Location 6 (rural forest)	1.183 (0.158)	1.127 (0.204)	0.437 (0.061)***	0.434 (0.057)***	0.589 (0.043)***	0.639 (0.060)***
Location 7 (rural savannah)	0.933 (0.142)	0.93 (0.172)	0.237 (0.034)***	0.419 (0.078)***	0.512 (0.043)***	0.592 (0.086)***
Head of household is of Asante ethnicity	0.936 (0.062)	0.954 (0.074)	1.171 (0.122)	0.996 (0.113)	1.071 (0.075)	1.075 (0.073)
Number of observations	3,981	2,017	3,981	2,017	3,981	2,017
Deviance	146.66	64.83	171.53	89.12	192.88	93.44

Source: Authors' calculations based on GLSS 4.

Note: Robust standard errors are in parentheses. Robust standard errors are used to account for the primary sample unit of the survey methodology.

***Significant at 1 percent.

**Significant at 5 percent.

*Significant at 10 percent.

**Table 5.6. Income Elasticities (for Per Capita Income),
            by Expenditure Category**

Expenditure category	Male-headed household	Female-headed household
Food	−0.022642	−0.006248
Consumer and durables	0.025495	0.019449
Housing	−0.015062	−0.017299
Health	0.001937	0.004653
Education	−0.002026	0.001191
Other	0.013221	0.004172

Source: Authors' calculations based on GLSS 4.

expenditure share for food and increase the expenditure share for all other cate-
gories except education, where the effect is not statistically significant. In the case
of internal remittances, the expenditure share for health and education is
increased in female-headed households, but there is no effect at all on expenditure
shares in male-headed households.

The findings with respect to the impact of internal remittances are consistent
with the results from the intra-household bargaining literature—that is, women
prefer to spend more on health and education. Although female-headed house-
holds receiving international remittances also have higher expenditures on health,
there are other more nuanced effects as well: they spend significantly less on food
and more on consumer and durable goods, housing, and other goods. The
increase in allocations to consumer durables and housing is consistent with the
emerging findings about the preferences of male migrants for the allocation of
remittances. Because we control for the level of per capita expenditures in the
household, those impacts are net of any income effects.

The fact that female-headed households that receive remittances do not behave
in the simple way predicted by the intra-household bargaining literature—
allocating a larger percentage of expenditures to health and education (and possibly
food) and reducing expenditures on consumer and durable goods—suggests that
the preferences of the remitter also influence the outcome. We now turn to that
topic.

*Impact of Sex of the Remitter on Household
Budget Allocation*

In this section, we use the remitter as the unit of analysis rather than the house-
hold in Ghana. As expected, most of the results from the previous analysis
carry over to this analysis. Results for per capita expenditure, household size,
proportion of girls and boys under age five, proportion of household members

who have completed junior secondary school, senior secondary school, and university, and the location dummies are quite consistent with those in the previous section.

The central purpose of this analysis is to determine whether the sex of the remitter has any impact on the allocation of household expenditures. In an initial specification of the model, we found that the sex of the remitter does not have a significant impact on household expenditure allocations. As mentioned, this may be due to principal-agent issues: the remitter cannot enforce his or her preferences about how remittances should be spent because he or she is absent from the household.

To control for the ability of the individual remitter to monitor and control how remittances are spent in the receiving household, we introduce new variables into the analysis in table 5.7. We include the remitter's relation to the household head, the frequency of remitting, and the remitter's place of residence. A remitter has a close relationship to the household head if s/he is the spouse, the child, or the sibling of the household head. We suspect that with a remitter with a close relationship to the household head will have more say over how remittances are spent. Similarly, a remitter who sends remittances more frequently has closer contact with his or her origin household and therefore more control over how his or her remittances are being spent. Categories of frequency are weekly or monthly, quarterly, and annually; the omitted category is irregularly. Finally, the place of residence is incorporated as a dummy variable; remitters who are located close to the receiver of the remittances (defined as within Ghana) are presumed to have more ability to monitor and control expenditures.

Once these variables are included in the regression, the sex of the remitter significantly influences the patterns of expenditure. Controlling for the remitter's ability to supervise how the household spends the remittances, the dummy for female remitter is statistically significant for the expenditure shares for food, health, and other goods. The expenditure share for food is lower, while the expenditure shares for health and other goods are higher, than for male remitters.

The location of the remitter also affects the composition of the household expenditure. If the remitter lives in Ghana, the budget share for food is higher, while the shares for housing and for consumer and durable goods are lower than when the remitter lives outside Ghana. If the remitter lives in Ghana *and* is female, the budget share for food is even higher, while the expenditure shares for health and other goods are lower than they are in other households.

The remitter's relationship to the household head also influences expenditure shares. If the remitter is a child of the household head, the health share increases and the education share decreases. If the remitter is the spouse of the household head, the share for education increases. Finally, if the remitter is the sibling of the household head, the share for consumer and durable goods decreases. This finding

Table 5.7. Fractional Logit Odds Ratio Coefficients, by Expenditure Type, Controlling for Principal-Agent Problem

Variable	Food	Consumer and durable goods	Housing	Health	Education	Other
Remitter is female	0.836 (0.054)***	1.054 (0.070)	1.013 (0.071)	1.328 (0.184)**	1.078 (0.164)	1.237 (0.121)**
Remitter is child of head of household	1.045 (0.047)	0.965 (0.046)	0.954 (0.035)	1.217 (0.113)**	0.845 (0.087)*	1.005 (0.070)
Remitter is spouse of head of household	0.972 (0.043)	1.001 (0.047)	0.942 (0.045)	1.044 (0.118)	1.333 (0.154)**	0.925 (0.065)
Remitter is sibling of head of household	1.051 (0.037)	0.930 (0.036)*	1.014 (0.048)	1.038 (0.073)	1.047 (0.098)	0.981 (0.050)
Remitter lives in Ghana	1.112 (0.047)**	0.882 (0.040)***	0.910 (0.039)**	1.036 (0.099)	0.981 (0.102)	0.957 (0.049)
Remitter is female and child of head of household	1.122 (0.060)**	0.926 (0.051)	0.997 (0.048)	0.806 (0.106)*	1.188 (0.157)	0.869 (0.072)*
Remitter is female and spouse of head of household	1.158 (0.255)	1.006 (0.317)	0.972 (0.143)	0.587 (0.265)	0.457 (0.174)**	1.191 (0.294)
Remitter is female and sibling of head of household	1.133 (0.055)**	0.952 (0.049)	0.958 (0.068)	0.942 (0.108)	0.819 (0.111)	0.881 (0.072)
Remitter is female and lives in Ghana	1.122 (0.065)**	0.978 (0.060)	0.975 (0.061)	0.799 (0.108)*	0.952 (0.135)	0.860 (0.072)*
Household receives remittances weekly or monthly	0.985 (0.038)	0.965 (0.037)	1.110 (0.037)***	1.164 (0.089)**	0.918 (0.077)	1.030 (0.069)
Household receives remittances quarterly	1.017 (0.041)	0.918 (0.033)**	1.029 (0.036)	1.028 (0.085)	1.265 (0.128)**	0.975 (0.063)
Household receives remittances annually	1.044 (0.037)	0.950 (0.033)	1.020 (0.035)	0.942 (0.065)	1.043 (0.115)	0.989 (0.060)

log_total expenditure per capita	4.348 (2.310)***	0.420 (0.225)	0.052 (0.026)***	3.789 (3.879)	1.001 (1.586)	0.452 (0.292)
log_total expenditure per capita squared	0.948 (0.018)***	1.037 (0.020)*	1.081 (0.020)***	0.956 (0.035)	1.000 (0.057)	1.032 (0.024)
Remitter's share in total remittances received by household	1.044 (0.035)	1.000 (0.035)	0.980 (0.036)	0.929 (0.080)	1.093 (0.089)	0.929 (0.050)
Female-headed household	1.024 (0.038)	0.858 (0.038)***	0.904 (0.031)***	1.063 (0.083)	1.497 (0.127)***	0.985 (0.047)
log_household size	0.800 (0.023)***	1.239 (0.045)***	0.486 (0.013)***	1.063 (0.059)	3.082 (0.219)***	1.026 (0.040)
Age of household head	1.007 (0.001)***	0.989 (0.001)***	1.003 (0.001)***	1.000 (0.002)	1.001 (0.004)	0.997 (0.002)*
Proportion of males >15 years	0.959 (0.061)	1.058 (0.094)	1.052 (0.080)	1.205 (0.214)	0.366 (0.090)***	1.026 (0.095)
Proportion of females >15 years	0.863 (0.057)**	1.277 (0.082)***	1.202 (0.070)***	1.418 (0.235)**	0.215 (0.054)***	1.122 (0.117)
Proportion of girls <5 years	1.223 (0.129)*	1.075 (0.083)	0.945 (0.090)	1.383 (0.268)*	0.091 (0.025)***	1.193 (0.257)
Proportion of boys <5 years	1.301 (0.138)**	1.188 (0.129)	0.733 (0.071)***	2.521 (0.464)***	0.058 (0.019)***	0.756 (0.130)
Proportion of family members who have completed primary school	1.069 (0.070)	0.929 (0.064)	0.992 (0.060)	1.015 (0.209)	0.949 (0.213)	1.040 (0.100)
Proportion of family members who have completed junior secondary school	0.925 (0.049)	1.158 (0.059)***	1.056 (0.051)	0.995 (0.133)	1.599 (0.383)*	0.911 (0.076)

Table 5.7. Fractional Logit Odds Ratio Coefficients, by Expenditure Type, Controlling for Principal-Agent Problem (Continued)

Variable	Food	Consumer and durable goods	Housing	Health	Education	Other
Proportion of family members who have completed senior secondary school	0.686 (0.085)***	1.313 (0.165)**	1.097 (0.076)	0.611 (0.150)**	4.968 (1.747)***	1.196 (0.252)
Proportion of family members who have completed university	0.228 (0.088)***	1.925 (0.676)*	5.369 (3.426)***	2.708 (1.846)	1.152 (1.021)	2.573 (1.014)**
Location 2 (urban coastal)	1.248 (0.114)**	0.950 (0.074)	0.397 (0.028)***	1.105 (0.205)	0.583 (0.072)***	1.049 (0.086)
Location 3 (urban forest)	1.279 (0.114)***	1.092 (0.081)	0.467 (0.028)***	1.057 (0.191)	0.538 (0.072)***	0.817 (0.066)**
Location 4 (urban savannah)	1.644 (0.196)***	0.889 (0.082)	0.487 (0.054)***	0.785 (0.180)	0.418 (0.126)***	0.761 (0.095)**
Location 5 (rural coastal)	1.449 (0.138)***	1.012 (0.071)	0.374 (0.026)***	1.146 (0.224)	0.448 (0.057)***	0.766 (0.073)***
Location 6 (rural forest)	1.474 (0.133)***	1.188 (0.082)**	0.303 (0.020)***	1.099 (0.188)	0.382 (0.046)***	0.635 (0.055)***
Location 7 (rural savannah)	1.710 (0.154)***	1.177 (0.089)**	0.280 (0.017)***	0.941 (0.172)	0.278 (0.057)***	0.558 (0.054)***
Head of household is of Asante ethnicity	1.000 (0.044)	0.955 (0.038)	1.024 (0.042)	0.969 (0.071)	1.157 (0.119)	1.050 (0.074)
Number of observations	4,011	4,011	4,011	4,011	4,011	4,011

Source: Authors' calculations based on GLSS 4.

Note: Robust standard errors are in parentheses. Robust standard errors are used to account for the primary sample unit of the survey methodology.

***Significant at 1 percent.

**Significant at 5 percent.

*Significant at 10 percent.

indicates that remitters have different impacts on household budgets depending on their relation to the receiving household.

Female remitters with a close relationship to the head of the household also influence certain groups of expenditure, but in a different way than male remitters do. Households receiving remittances from female children allocate a higher share to food and education and a lower share to health and other goods than other households. Households receiving remittances from female siblings allocate more of their budget to food. Households receiving remittances from a wife allocate much less of their budget to education than households receiving remittances from a husband. There are two likely explanations for this result. First, according to the intra-household bargaining literature, males tend to spend less on education than other commodities; in households where the wife is absent, it is likely that the head of the household is a man who has relatively more say over household decisions. Second, when the wife leaves the household, it is plausible that children leave with her or that she leaves when the children are out of school age; in either case, the expenditure share on education in the household left behind would decrease.

The results obtained in this section, in which we include the remitter's relationship to the household head, the remitter's location, and the frequency of remitting, have two possible interpretations. The first is that we are capturing the principal-agent monitoring problem and thus are controlling better for this aspect of the unobserved heterogeneity of migrant households. The second interpretation is that these variables are in fact identifying unobserved preferences that make households with internal and international migrants allocate their budget differently.

We favor the first interpretation because the results are consistent with previous research on intra-household bargaining. First, the intra-household bargaining literature predicts that increasing the amount of resources controlled by women raises the allocation of resources toward education, health, and nutrition. The results show that when the remitter is the husband, the share of expenditure on education increases, since the wife is staying behind. In contrast, when the wife is the remitter, the share of education decreases, since the male is staying behind. This might be the result of the increase in control of expenditure that a wife experiences when she is the household head or the lack of ability to control and monitor expenditures when she is away.

Conclusions

In this chapter, we examine two research questions regarding remittances and gender: first, how the sex of the household head and remittances affect household budget allocations and, second, how the sex of the remitter shapes these

allocations. We find that female-headed households receiving remittances (both internal and international) seem to have different expenditure patterns than their male counterparts. We observe an interesting difference between female-headed households receiving remittances from within Ghana and female-headed households receiving remittances from abroad. The former group has larger expenditure shares for health and education, thus confirming conclusions from a host of intra-household models. While the latter group has higher expenditure shares for health, they spend significantly less on food and more on consumer and durable goods, housing, and other goods, patterns that are consistent with the emerging findings about the preferences of male migrants for the allocation of remittances. Thus we observe heterogeneity in expenditure patterns within the group of female-headed households receiving remittances.

At first blush, the sex of the remitter has no impact on expenditure patterns. Once we control for the remitters' relation to the household head, the frequency of sending remittances, and whether funds are remitted from inside or outside of Ghana, however, significant differences emerge. These variables serve as a proxy for the capacity of the remitter to follow up on the intended use of the remittances. Our results indicate that households with female remitters in Ghana devote a relatively lower share of their budget to food expenditure and a relatively higher share to health and other goods compared to households with male remitters. Our results also show that the remitter's relationship to the household head changes the expenditure shares in different directions. For instance, households with a remitter who is the husband of the household head, on average, have a higher expenditure share on education, while the opposite holds for households whose remitters are the wife of the household head. We presume that these changes in expenditure patterns can be attributed to shifts in power on the intra-household level that occur when a substantial part of the household budget relies on a household member abroad. Overall, the results of this exercise are evidence that the sex of the remitter can matter for budget allocations.

This chapter is one of the first pieces of evidence that the sex of both the sender and the receiver of remittances should be taken into account when analyzing the impact of remittances on household expenditure patterns. The chapter also shows that changes in intra-household bargaining that occur in the context of migration may influence the net impact of migration in the country of origin. In addition, we show that it is important to control for the ability of remitters to monitor and control expenditures when examining the determinants of household expenditure shares. In sum, we believe that the literature on remittances would benefit from including a gender perspective in order to further our understanding of the relationships between migration and its development impacts.

Future research should use data sets that contain information on absent house-hold members, whether or not they send remittances. Such data would permit researchers to disentangle the effects of remittances and migration per se. This type of analysis is important, because migration will change household size and may affect the composition of expenditure, whether or not the migrants remit (Schiff 2006).

In addition, it is necessary to develop better data that can provide more precise measurement of intra-household bargaining power, thus obviating the need to use imperfect proxy variables such as the sex of the household head. Future research should also work to solidify the links between the intra-household allo-cation literature and the migration literature by measuring not only the impact of migration on expenditure shares, but also its impact on important developmental outcomes such as children's nutritional and educational outcomes.

Endnotes

1. Intentional data on the use of remittances may not give an accurate indication on how remit-tances actually will be used unless there are mechanisms of monitoring available for the remitter to control how the receivers of the remittances spend the money they receive.

2. The importance of measuring resources controlled at time of marriage—rather than resources currently controlled—is that it is exogenous to any bargaining process during the marriage process itself.

3. Current asset is defined as all assets owned by the household at the time of the survey. For more information, see Quisumbing and de la Brière (2000).

4. This implies that we risk conflating remittance effects with other impacts of migration on the household level. For a more detailed discussion, see McKenzie (2006).

5. While this is a less-than-perfect proxy, there is precedent for using it in a study of remittances to measure bargaining power (see De and Ratha 2005).

6. The variables age of the household head and Asante ethnicity of the household head are used as instrumental variables by Adams (2006b) in his study on the impact of remittances on expenditures in Ghana.

7. Specifically, the household budget allocation might be influenced by the age of the household head (for example, the number and age of children are related to the age of the household head, and the number and age of children, in turn, are an important determinant of the composition of house-hold expenditures). Similarly, migration experience may exert a direct effect on the composition of household expenditures because of a change in consumption preferences that results from the experi-ence of living elsewhere, either within Ghana or abroad.

8. Data on the exact location of the remitter are only available for half of the sample (only for remit-ters inside Ghana). Without exact location, we cannot calculate neither distance nor average incomes.

9. The data set includes six categories of the remitter's relationship to the household head: (1) parent, (2) spouse, (3) child, (4) sibling, (5) other relative, and (6) nonrelative. The frequency of remitting is captured by three dummy variables that capture whether or not the remittances are sent monthly or weekly, quarterly, or annually. The main assumption here is that remitters might have more contact with their household if they remit on a regular basis, and consequently, they might have more control over how their remittances are being spent.

10. We do not interact the sex of the remitter with the frequency of the remittances sent because we do not have reasons to believe that the effect of one type of frequency might have a different impact on household expenditure if sent by a man or a woman, other things being equal.

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