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Intra-household allocation with shared expenditure choices: experimental evidence from Filipino migrants

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Abstract

Sharing information concerning expenditure choices between a migrant and the recipient affects the migrant's allocation patterns. In a lab-in-the-field experiment, Filipino migrants are asked to earmark an in-kind budget to be delivered to their most closely connected household (MCCH). When the MCCH is fully aware of the migrant's decisions (i.e., symmetric information), we observe that the migrant raises the portion for consumption goods in the range of 10.0–10.5% with respect to the case when the migrant's choices are not disclosed (i.e., asymmetric information). Moreover, when sharing information, the migrant relies on more involvement of the recipient household and lowers by 7–9% the allocation to expenses she could monitor ex-post more strictly. The former result is consistent with the signaling motive, whereas the latter supports the presence of strategic behavior by the migrant remitter. Education allocations are significantly higher in intra- rather than inter-household transfers and this provides insights for conditional cash transfer policies.

Keywords In-kind giving · Signaling motive · Strategic behavior · Remittance motives · Remitting for education · Dictator game · Philippines

JEL codes F24 · O15 · D19 · C92 · D01

1 Introduction and literature references

Remittances are a fundamental raison d'être for the geographical separation of *transnational households*. Intra-household communication and bargaining costs can be higher in transnational than in co-resident households, creating potential

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incentives for the remitter to impose restrictions on the use of transmitted funds (see Seshan and Zubrickas 2015). Observing decisions about whether to target remittances to particular uses offers economists an opportunity to investigate *intra-household transfers* and related expenditure choices that can be difficult to observe in co-resident households.[1]

The literature on altruism and reciprocal giving has thoroughly investigated how the presence of divergent preferences may induce the dictator/giver to give *in kind* rather than in cash to express control over the consumption of the recipient. The Samaritan's dilemma, proposed by Buchanan (1975) and formalized by Bruce and Waldman (1991), justifies giving in kind because the recipient may make some expenditure decisions (i.e., buying an expensive car rather than paying for college) that are not welfare enhancing in the long run, counting on further bequests later in life.

In this paper, we examine how the *composition* of in-kind remittances from a list of goods—rearranged as consumption-type and investment-type[2] goods or as verifiable and strictly-verifiable—may change depending on what the recipient household knows. In case the household can observe the list, the migrant's decision process is fully disclosed when the goods are delivered. Sharing information on the choice sets may affect the migrant's decisions ex-ante with respect to the case when the migrant knows that her choices are not disclosed to the recipient household.

In terms of contribution to the current literature, our work provides some new insights on intra-household allocation of in-kind transfers. At the same time, it relates to the literature on remittances and links two approaches: one that underlines the importance of information asymmetries, and the other that investigates in-kind allocation decisions. To our knowledge, this is the first study that examines the role of information sharing when the transfer is in kind and the giver decides the allocation amongst a closed set of goods. The main research question is whether the giver's (migrant's) in-kind choices change depending on whether the recipient (household) is aware of those choices.

Under one explanation when the migrant knows to be observed ex-post (this is the case of symmetric information) she is more likely to adapt to the preferences of the recipient household, which is probably more impatient, and tending to prefer consumption over investment. The dominant motive for remitting can then be associated with the *signaling model*: by changing the composition of the in-kind bundle and knowing she is observed, the migrant wants to signal knowledge of the recipient's preferences, as in Prendergest and Stole (2001). Our results confirm that there is a significant change when the information scenario varies. On the one hand, this outcome ascertains that there is effectively a divergence in preferences between the migrant-giver and the household-recipient. On the other, by assuming that preferences are not coincident (some evidence is reported in Section 2.3), our result offers support for the signaling motive.

[1] See Beblo and Beninger (2017) for recent evidence on in-couple income pooling.

[2] We use the term "investment-type" to refer to all choices that imply future consumption and/or an increase in household wealth, also in terms of human capital—as for the case of education. An alternative appropriate term would be "household saving-type".

Another explanation for choosing different sets under shared information can be related to the strategic behavior of the migrant. Choosing (strictly) *verifiable* expenditures[3] implies stronger constraints for the recipient whose actual spending behavior can be monitored ex-post. For instance, funds labeled as "saving for others" are more easily distracted rather than transfers indicated to "buy a car", whose implementation can be verified with the actual presence of a vehicle. Under shared (or symmetric) information the migrant may decide to lower the portion of verifiable expenditures since sharing the choices observationally would induce the recipient to feel more obliged to follow the indications of the giver. Indeed, we find that under information sharing the portion of (strictly) verifiable goods significantly decreases.

Finally, we exploited the wide variety of kinship between the migrant-giver and the household-recipient in our sample. We have compared transfers that could be more strictly defined as *intra-household*—for instance, when the head of the household is a spouse—versus *inter-household*—as in the case of transfers to a sister or an uncle. Our results highlight significant differences between intra- and inter-household transfers where the former lean towards more productive (investment-type) goods. This conclusion supports the policy design of conditional cash transfers programs based on the intra-household transfer hypothesis (see, for instance recently, Bergolo and Galván 2018 and Aycinena et al. 2019).

Our study is closely linked to De Arcangelis et al. (2015) and uses data from the same experiment. In De Arcangelis et al. (2015) the main research objective regarded in-cash transfers and, in accordance to the literature on unconditional cash transfers, they find that labeling remittances for education increased transfers relatively more than other more constrained forms of transmitting funds home (such as directing remittances directly to the schools or universities). They found a limited effect of information asymmetry on the in-cash transfers. This current work is complementary and uses the data on the *in-kind* rather the in-cash transfers of the experiment in order to investigate the role of shared information on the allocation choices.

A range of recent studies has empirically tested the role of information sharing in intra-household transfer decisions (Ashraf 2009), raising doubts over the unitary model of the household. Many results have challenged the proposition that the joint actions of a household that contains separate optimizing individuals can be represented as the actions of a single utility-maximizing agent. For instance, Maitra and Ray (2006) show how expenditure patterns change depending on the member of the household that receives income assistance in a South African case. Reynolds (2015) studies the special household case of teenage mothers and their mothers in Brazil to test the cooperative nature of a household. These studies explore how under different settings the members may take diverse allocation decisions regarding the available resources.

Other contributions suggest that there is a relevant desire to control and monitor the usage of the in-kind or in-cash gifts that are sent to the recipient. Ambler (2015) shows that information asymmetry on the source of a windfall gain that originates money transfers from the migrant-sender to the household-recipient may affect the level of remittances. She uses data collected from an experiment with migrants from El Salvador and concludes that migrants remit more in cases when their decisions are

[3] See Section 2.1 for the definition of monitored verifiable goods.

revealed to the recipient. Chen (2006) studies wife-husband behavior in China and finds that they exhibit non-cooperative strategies for activities that are difficult to monitor. De Laat (2014) concludes that Kenyan migrants spend resources to monitor their wives. Batista et al. (2015) show that inter-household transfers are also made in kind when the possibility to allocate between in-kind and in-cash resources is randomly given to individuals in an experimental setting. Information asymmetries induce strategic behavior among household members that can cause different consumption-investment decisions (Ashraf 2009) or strategic appropriation of resources (Anderson and Baland 2002).

Our study wants to bridge these two approaches by investigating the allocation decision of an in-kind budget when information is or is not shared between the giver and the recipient. To our knowledge, a study that analyses the role of information asymmetry when the transfer (remittance) is in in-kind resources and the giver (dictator) decides the allocation from a closed list of goods, has not yet been proposed. In particular, we want to check whether, given the amount of in-kind resources to transfer, information asymmetry may play an important role in the *composition* of the given budget between in-kind consumption-type goods and in-kind investment-type choices, or between in-kind budget indications that can be more or less monitored. In the literature, motives for giving in kind are still being discussed. Competing models that are relevant for our experimental setup are the public-private good model and the signaling model, whereas the presence of asymmetric information can also justify the strategic behavior by the migrant-giver in providing resources with more or fewer constraints, i.e., choosing budget indications with different monitoring characteristics.

In the following section, we report the experimental design and we focus on the in-kind portion of the experiment. The estimation strategy and the empirical results are discussed in Section 3. Section 4 concludes with some policy implications.

2 Experimental setting

The experiment was conducted with Filipino migrants working in Rome (Italy) during 2012–2013. At that time, in Italy, the estimated number of Filipino migrants (generally defined as OFW, Overseas Filipino Workers) was approximately 113,000, remitting about US$370 million, on average, back to the Philippines each year.

Filipinos are a small minority of the overall population of Rome, and for this reason, intercept-point sampling was used for this study (see De Arcangelis et. al 2015). Between August 2012 and January 2013, 2291 Filipino migrants were intercepted at common meeting points in Rome and at the main branch in Rome of the Bank for Philippine Islands (BPI), which was one of the partners of the project to implement the direct payment.[4]

[4] Intercepts were scheduled at various times on a variety of days of the week. The intercept points were five fixed locations: the Santa Pudenziana Filipino community church, the Bank of the Philippine Islands Rome branch, the Embassy of the Philippines, the headquarters of an important Filipino NGO (OFSPES), and the central train station in Rome (Termini Station).

The migrants were invited to participate in the survey by first receiving a general introduction to the research project, which was described as "about the lives and financial decisions of OFWs in Rome, and about the remittances they send home to the Philippines." Once the migrants agreed to participate, they had to answer some preliminary screening questions to determine their eligibility to participate in the survey. To be considered eligible, a respondent had to meet two criteria: (i) the province of origin of the migrant and of his/her "mostly closely connected household" (MCCH, i.e., the household where they lived before migrating, or the household they send the most remittances to) should be in one of three regions of the Philippines where there were established contacts with schools and universities to implement the direct payment, and (ii) to have a relative in the Philippines aged 5–22. If the migrants did not refuse to answer further questions, then the interview began, and they were given a further explanation of the project.[5]

The fieldwork produced a sample of 501 migrant workers who were equally and randomly assigned to three different treatments regarding information sharing with the MCCH. The interview lasted approximately 40–45 min and was divided into three main sections: one initial section on the budget allocations of in-kind goods and services that is the main focus of the current analysis, a second section as a baseline survey, and a third section that included two lab-in-the-field experiments.

2.1 In-kind budget allocations under different information scenarios

As the survey started, the migrants were told that they would be eligible for a lottery of 1000 euros and that the choices they made would be implemented at the end of the project, exactly as they had stated during the interview, in case of a win.[6] The sample was randomized into three treatment groups of equal number (167 individuals each) where the migrants made choices under three different scenarios of information symmetry/asymmetry with the MCCH.

The MCCH was told that the funds to acquire the goods or to make the monetary transfers (needed for the financial services) were obtained as a reward to the migrant for participating in important research. The three treatments were designed around two main modes of information sharing with the MCCH on the choices of the migrant. Before deciding how to allocate any budget (in terms of in-kind goods and services or how to remit the win), the migrants knew whether the MCCH was informed of the closed list from which the migrant picked her choices. The three treatments are described as follows.

1. *Treatment 1: Private Information*. In case of a lottery win the MCCH in the Philippines would receive the goods and the monetary transfers according to what the migrant had stated during the interview, but the MCCH was not to be given any information on the alternative goods or services that could have been

[5] The statement was the following: "We will also be offering you a new product related to education and remittances at the end of the survey, and you may benefit from using this product." More details on EduPay can be found in De Arcangelis et al. (2015).

[6] The lottery was actually implemented on 28 March 2013.

chosen. In other words, at the time of the allocation decision, the migrant would make her choices knowing that she is not observed ex-post.

2. *Treatment 2: Full Information Sharing*. In this treatment group, the migrants made their choices knowing that the MCCH in the Philippines would be fully informed of which goods and services they had chosen from a list. In this scenario, the migrants' decisions may be affected by the ex-post full disclosure of their preferences to the MCCH. Although the interviewee was initially told by the enumerator "It could be anything that you want us to give them (not what you think your family would want)," the information sharing could affect migrants' decisions over what to pick from the list.
3. *Treatment 3: Information Sharing + Social Excuse*. As in Treatment 2, the household in the Philippines would be fully informed of all the choices made but would also be told that "a small donation to a Filipino organization in Rome" was made when the financial facility available via the experiment, named *EduPay* (see De Arcangelis et al. 2015), was chosen. Hence, the migrants in this group know that they would be observed in their choices as in Treatment 2 but know also that a social excuse could justify expenditure in education when allocating the windfall of the lottery.

Once the migrants in each group were told of the type of information sharing, the interview could begin.[7] In the first experiment, the migrants were asked to divide the 1000 euros across a list of goods and services that were going to be delivered in kind to their MCCH. The migrant knew that the choices declared during the survey would be fulfilled exactly as she divided the 1000 Euros in case of a win.[8]

Table 1 reports the list of the goods and the regrouping that we propose in our analysis. The *consumption-type goods and services* items are broken down into three groups: (i) basic and regular expenditure, such as food, clothes, rent, and utility payments; (ii) durable consumption, including house repairs; and (iii) services, such as medical expenditures, insurance payments, and marriage expenses. For the *investment-type goods*, we separated education expenses because the interview stressed this item at the start and may have over-sensitized the migrant on this expenditure. The other investment goods are gathered into three sets, as (i) residential investment, including expenditure related to house or land; (ii) financial investment, considering different forms of saving related to intertemporal reallocations to buy durables, finance marriage expenses, and cover emigration projects, or forms of long-term financial investment; and (iii) business investment, as agricultural inputs or direct business expenses.[9]

[7] Enumerators were instructed to inform the interviewee of the type of information sharing with the MCHH at the beginning of the survey, and a special ID code was assigned for each treatment. The survey instrument is available upon request and shows that the migrant is reminded of the types of information sharing again at the beginning of the experiment in the second part.

[8] Migrants were told that they would not be allowed to change their allocation decision if they later learned that they had won the lottery, so they should take the allocation decision seriously.

[9] Residual items as *Other expenses* are included into the consumption group and *Saving for other* in the investment group as business item. As Table (2) shows, the quantity of funds for *Other expenses* is negligible, but we decided to include them to equal 1000 euros for the budget assigned. When taking them out of the analysis, nothing changes. Results are available upon request.

Table 1 Breakdown of goods and services allocated in-kind

Food	*Basic*	***Consumption-type goods and services***
Clothes		
Rent payment		
Utilities payment (electricity, water, etc.)		
Phone (house, cell phone, calling cards)		
Large goods for the household (durables)	*Durables*	
Car or other vehicle		
Construction of a house (including repairs)		
Medical expenditure and medicines	*Services*	
Insurance (life, health, etc.)		
Marriage expenses		
Other expenses		
Savings to buy a house	*Residential*	***Investment-type goods***
Savings to buy a land		
Down payment on a house/land		
Current mortgage on a house/land		
Savings to buy a vehicle	*Financial*	
Savings for marriage expenses		
Long-term investments		
Emigration expenditures		
Agricultural inputs	*Business*	
Business expenses		
Savings for other		
Education expenses	*Education*	
Verifiable goods		
Strictly Verifiable goods		

Allocations are also differentiated depending on the *degree of monitoring* that can be exercised ex-post by the migrant-giver. Some of the in-kind indications—such as the durable goods—can be physically verified in case (and/or when) the migrant returns, while for others some forms of invoicing are standard practice even in the context of an emerging economy like the Philippines. We pick parsimoniously one most representative items in each of the sub-categories reported in Table 1 (basic, durable and services for consumption, and residential, financial, business and education for investment) and define such in-kind expenditures as *verifiable goods* and they include: utilities payments, consumption durables that would necessarily and more likely imply some form of invoicing, medical expenditures, constrained forms of savings,[10] long-term investment, agricultural inputs, education expenses.[11] A subset of *strictly verifiable goods* is also proposed for robustness check and includes only durables among the consumption set, constrained savings and education expenses in the investment set. The portion of verifiable goods may depend on the possibility of sharing or not sharing information with the MCCH under the hypothesis of strategic behavior by the migrant: the need to include more verifiable goods is lower under shared information since the disclosure of allocation choices

[10] See footnote 20 in Appendix A.

[11] Other aggregates have been used in the empirical analysis without significant changes. Additional material is available from the authors upon request.

Table 2 Summary statistics of the in-kind allocations for the three treatments

		Private Information (T1)		Full Information Sharing (T2)		Full Information Sharing + Social Excuse (T3)		Whole Sample	
	Amount in euro allocated for:	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**
Consumption	Food	104,79	159,65	122,27	157,9	120,64	157,92	116,66	159,14
	Clothes	15,15	47,65	28,92	86,82	24,86	67,98	22,93	69,4
	Rent payment	2,69	22,13	13,83	56,46	23,43	113,38	13,27	74,4
	Utilities payment	26,95	63,95	31,53	64,63	30	65,09	29,83	64,84
	Phone payment	4,73	24,43	7,53	31,54	4,94	19,56	5,92	25,96
	Large goods (durables)	3,29	23,37	7,78	78,38	3,92	33,02	4,99	50,84
	Car or other vehicle	0	0	12,87	109,62	7,11	60,5	6,65	72,29
	Construction house and repairs	48,5	184,28	81	217,24	117,47	279,17	82,09	231,23
	Medical expenditure and medicines	68,5	148,61	56,43	103,56	78,59	164,37	68,28	141,41
	Insurance (life, health, etc.)	23,17	123,95	27,69	126,77	24,34	121,13	25,02	123,62
	Marriage expenses	1,8	23,21	0	0	3,01	38,81	1,6	26,03
	Other expenses	15,57	111,93	2,78	23,4	9,64	84,01	9,31	81,84
Investment	Savings to buy a house	17,66	108,12	23,29	118,21	0,6	7,76	13,85	92,92
	Savings to buy a land	36,83	163,75	23,6	124,36	5,42	43	21,94	121,71
	Down payment on house/land	7,9	50,6	8,98	86,31	14,16	95,64	10,32	79,68
	Current mortgage on house/land	7,19	44,68	10,78	98,81	18,98	103,36	12,28	86,34
	Savings to buy a vehicle	5,69	43,71	18,26	121,41	4,82	42,37	9,58	78,47
	Savings for marriage expenses	13,77	111,35	0	0	0,3	3,88	4,69	64,52
	Long-term investment	65,87	205,14	58,68	212,7	56,63	189,54	60,28	202,16
	Emigration expenses	4,19	47,02	7,49	66,91	0,3	3,88	3,99	47,27
	Agricultural inputs	37,43	150,67	27,54	142,23	17,77	81,28	27,54	128,45
	Business expenditure	35,33	151,43	25,45	141,3	52,2	198,25	37,56	165,34
	Savings for other	107,78	284,38	84,91	251,95	101	278,84	97,7	271,47
	Education expenses	344,91	349,17	318,95	350,9	276,27	332,41	312,82	344,7
	TOTAL	999,69		1000,56		996,4		999,1	
	Observations	167		167		167		501	

Verifiable goods
Strictly Verifiable goods

may imply more compelling behavior of the MCCH who would feel involved in the choice decision.

Table 2 presents some basic summary statistics of the budget allocations for the whole sample and distinguishes the three treatment groups. Independently of the treatment group, the highest expenditure item (approximately 312 euros for the whole sample and ranging between 276 and 345 euros among the treatment groups) is always education. This result is an expected outcome because the interview stressed the issue of financing education at home. The second highest type of expenditure is consistently *food* for the three treatments (approximately 117 euros for the whole sample). The most volatile choice is the expenditure on the house (construction and repair) ranging between 48 and 117 euros. We ought to notice how the allocations for Treatments (2) and (3) are very similar to one another and very different from Treatment (1).

In the Appendix A, we provide the section of the survey instrument with the list of all of the choices as presented to the interviewee.

2.2 The baseline survey

After the budget allocation, the baseline survey collected information on the migrants' demographic background, labor market status, remitting behavior, and the quality of their relationship with the MCCH in the Philippines (e.g., measures of

trust). Summary statistics are reported in Table 3. The sample contains 73% female, and the average (and median) age of the respondents is 42. Most (70%) of the migrants have a college or a university degree and have been living in Italy for approximately 7 years (median). Only 21% of the respondents has never married, and only 5 % has their spouse with them in Italy. Nearly 68% of the respondents are employed as domestic workers, with the other main occupations being housecleaners (8%) and caregivers (6%). The median wage is 900 euro per month. Almost 96% have remitted regularly to the MCCH in the Philippines in the last 12 months, and 72% remit monthly. The median amount of remittances is 380 euros/month. The characteristics of our sample closely resemble the socio-economic patterns of the Filipino population residing in Italy.[12]

2.3 Preference dissimilarity

In Table 4, we report the relevant questions in the survey instrument that could provide an idea of the relationship between the migrant and the MCCH. The migrant does not seem to be well-informed (see Question C3), but she shares a general agreement (Question C4) and participates in the MCCH decisions (Question C5). However, we notice a difference between wishing to have more influence *in general* and wishing to have more influence "*over the overall budget*." In this latter case, both mean and median above 50% indicate that the migrant would affect how the money is spent rather than having a general influence over the MCCH. We deem this result as preliminary evidence of divergence in preferences.

The detection of non-coincident preferences can be complemented with a direct and an indirect measure of trust between the migrant and the MCCH. First, according to the last line in Table 4, the answers to Question C9 reveal a very high level of trust between the migrant and the MCCH, scoring 9.08 out of 10 in the mean. An alternative (although indirect) measure of trust is obtained from the dictator game that the migrant played in the last part of the interview. The migrant was asked to declare how much of the 1000 euros to allocate between herself and the head of the MCCH, who then chooses how much to keep for himself and how much to send back to the migrant, knowing that the amount he sends back is doubled. When the level of trust is very high, the optimal choice is to send 1000 euros counting on the whole amount being sent back entirely. In the end, both the migrant and the MCCH would have 2000 euros, i.e., the maximum amount. Figure 1 shows that most migrants chose to split exactly the initial amount and that a high percentage (27.2%) decided to send zero. Only 10.4% fully trusted the head of the MCCH sending 1000 euros.

The evidence of low or imperfect trust can be associated with information asymmetries between the two parties since they reside in two different markets, or with non-coincident preferences. The rest of our analysis may provide further evidence on this interpretation.

[12] Italia Lavoro, 2013. "The Philippine Community in Italy", Annual Report on the Presence of Immigrants. Ministero del Lavoro e delle Politiche Sociali, Government of Italy.

Table 3 Baseline summary statistics

	Mean	SD	Min	Median	Max	Observations
Migrant is a female	0.73	0.44	0.00	1.00	1.00	501
Migrant's age	42.25	10.32	19.00	42.00	71.00	499
Migrant is married	0.68	0.47	0.00	1.00	1.00	501
Migrant's number of children	1.95	1.47	0.00	2.00	8.00	501
Migrant's year in Italy	9.68	8.56	0.00	7.00	38.00	499
Migrant's Phil. citizenship	0.99	0.10	0.00	1.00	1.00	500
Migrant is employed	0.98	0.15	0.00	1.00	1.00	499
Migrant is self-employed	0.02	0.15	0.00	0.00	1.00	488
Migrant's monthly income (€)	1045.18	566.42	0.00	900.00	7000.00	481
Migrant's hours working	42.66	18.87	0.00	40.00	88.00	499
Migrant is remitting monthly	0.72	0.45	0.00	1.00	1.00	501
Remittances monthly (€)	412.54	299.17	0.00	380.00	3000.00	499
Household efficiency and trust	0.608	0.310	0.00	0.5	1	500

All variables are from 2012 baseline survey of migrant

Table 4 Communication with the MCCH to evaluate the difference in preference

	Mean	SD	Min	Median	Max	Observations
Question C3: *How well informed are you about what is going on in MCCH: very well informed, well informed, not well informed, or not informed?*	1.36	0.62	1.00	1.00	4.00	500
Question C4: *Have you had any disagreements with anyone in MCCH household regarding remittances in the last twelve months?*	0.26	0.44	0.00	0.00	1.00	500
Question C5: *Do you participate in the decisions regarding how remittances sent to MCCH are spent?*	0.73	0.44	0.00	1.00	1.00	500
Question C6: *Do you wish you had more influence over how MCCH spends your remittance money?*	0.37	0.48	0.00	0.00	1.00	498
Question C7: *Do you wish you had more influence over the overall budget in MCCH?*	0.55	0.50	0.00	1.00	1.00	496
Question C9: *How much do you trust the persons in your MCCH the Philippines given a scale from 1–10?*	9.08	1.54	1.00	10.00	10.00	499

3 Empirical evidence

Section (2.3) reported evidence on the preference divergence between the migrant and the MCCH. When considering consumption and investment goods, there are practical reasons to expect that the migrant leans towards a higher portion of the remittances spent on investment, while the MCCH prefers consumption. In the logic of the public goods model, for instance, investment goods may be preferred because migrants can enjoy the related returns when returning home in the future. Instead, consumption goods

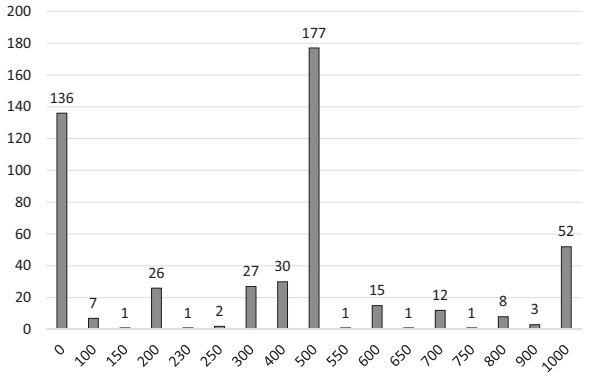

Fig. 1 Distribution of migrants in the trust game as evidence of preference divergence

(especially nondurables like food) are exclusively enjoyed by the MCCH as private goods. As the data show, when the migrant decides budget allocations knowing that her choices would not be observed by the MCCH, she apportions a higher share to investment goods. Alternatively, expense allocations can be broken down depending on the ability to monitor them. A variation of expenditure share between the two groups could reveal strategic behavior of the migrant-giver.

In our experiment, there are two scenarios for information. Scenario (1) of *private information* (or information asymmetry) corresponds to Treatment (1), and Scenario (2) of *information sharing* (or information symmetry) includes Treatments (2) and (3). The regression analysis presented below shows that this latter two treatments are statistically indistinguishable and can be merged.

In the next section, we present some preliminary descriptive statistics, then we describe the regression analysis and the estimation results.

3.1 Descriptive statistics

As *prima facie* evidence, Fig. 2 reports the average expenditure levels in euros for both divisions in consumption-investment and in verifiable/strictly-verifiable goods, as grouped in Table 1, for the two scenarios.

The total consumption budget increases significantly from 315 euros to 396 euros, and total investment shrinks from 685 euros to 578 euros. Average changes are not evenly distributed and that there is a significant reshuffling. The greatest decline in consumption is observed for durables (from 115 to 52 euros) when the migrants decide with a blinded MCCH in scenario (1). This is evidence of a significant change and in line with preference divergence and signaling motive to give. Expenditure in services on average slightly rises.

In scenario (2), the allocation for total investment decreases by 107 euros, and the decline is consistent among the four aggregate items. The largest decline is observed for business investment and education. As discussed above, the decrease in the latter may be due to the design of the experiment and of the interview. By announcing at the start that the migrant will be able to send money for education from the eventual lottery win, education expenses can be considered as more

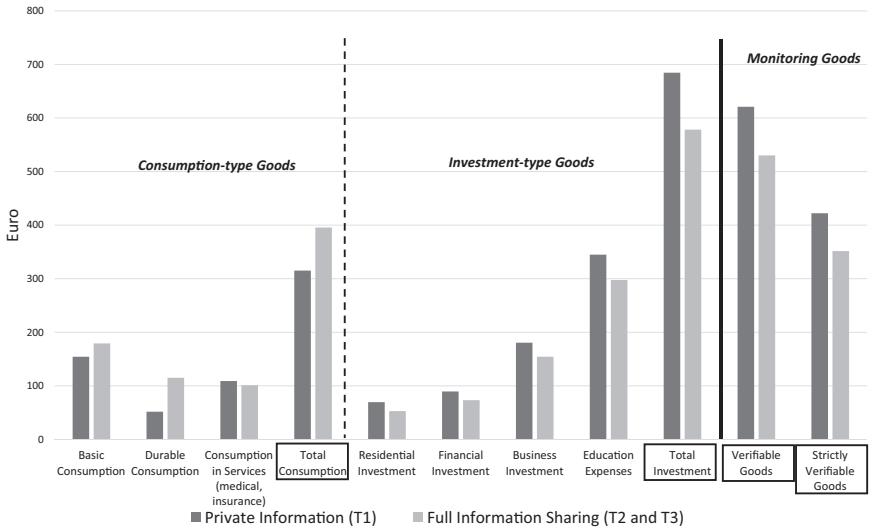

Fig. 2 Breakdown of in-kind aggregate expenditures across the 2 scenarios

fungible in the in-kind budget allocation. Instead, the fall in business investment may indicate that the migrant has a more entrepreneurial attitude when she can decide with full autonomy.

The reshuffling is evident also when the expenditure indications are divided as more or less subject to monitoring. The histograms on the further right side of Fig. 2 show significant changes between the two scenarios. Under shared information the portion of verifiable goods is lower by more than 90 euros (530 versus 621 euros) and the share of strictly verifiable goods is 352 euros instead of 422 euros. A possible interpretation is that the migrant-giver does not need to choose a higher portion of (strictly) verifiable goods when also the household-recipient observes the allocation choice and would feel compelled to implement the expenditure choices.

Additional preliminary evidence is given in Figs. 3, 4 where we plot the cumulative distribution functions of the consumption-investment breakdown and for the (strictly) verifiable categories for the two scenarios. Figure 3a shows the statistical dominance of consumption under *Full Information Sharing* meaning that the budget allocated for in-kind consumption goods is higher at any probability level when the migrant knows that the MCCH is fully informed of her choices. This characteristic holds when considering all consumption subgroups (graphs are available upon request). Instead, in Fig. 3b there is statistical dominance of the investment goods allocation for the case of *Private Information*. In Fig. 4 we also have stochastic dominance of (strictly) verifiable budgets under *Private Information*. Budgets for (strictly) verifiable goods are higher under *Private Information* for any probability level. This is evidence in favor of migrant's strategic behavior, i.e., bending allocation choices towards budgets that needs less monitoring only when allocation choices are shared with the household-recipient.

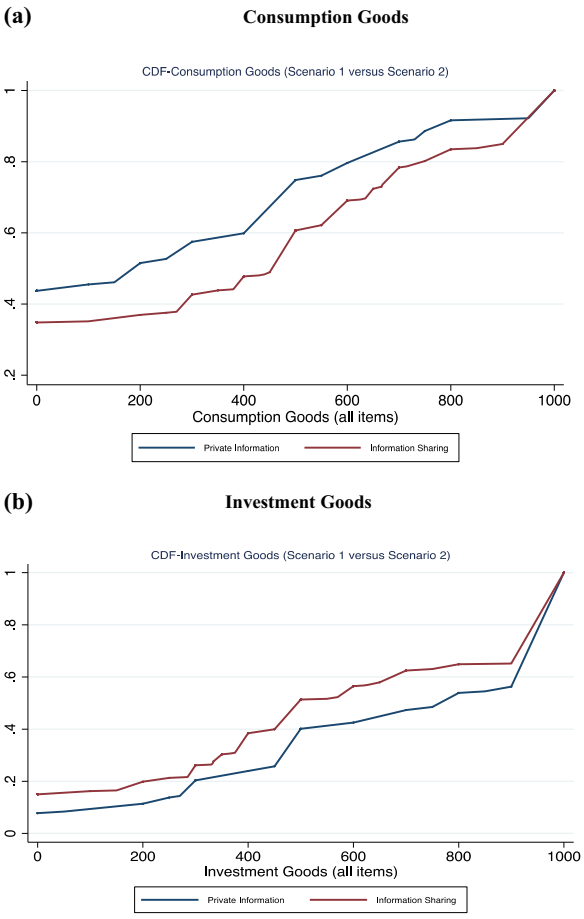

Fig. 3 Cumulative distribution function for consumption and investment goods—Scenario 1 *Private Information* (T1) vs Scenario 2 *Information Sharing* (T2 and T3)

3.2 Estimation strategy and regression results

The main point of our analysis is to investigate whether allocation choices change due to information sharing.

Regarding to the distinction between consumption and investment goods and the non-coincident preferences between the two parties, if no difference arises under information symmetry or asymmetry, then the logic of the public goods model is dominant because being observed by the MCCH does not induce any change, i.e., always preferring more investment. Instead, if we detect a significant difference, then the migrant seems to adapt her choices to the MCCH *desiderata*, although the migrant is playing a dictator game.

When considering (strictly) verifiable goods, under information sharing there may be a decrease in their portion if the migrant/dictator assumes that does not need to

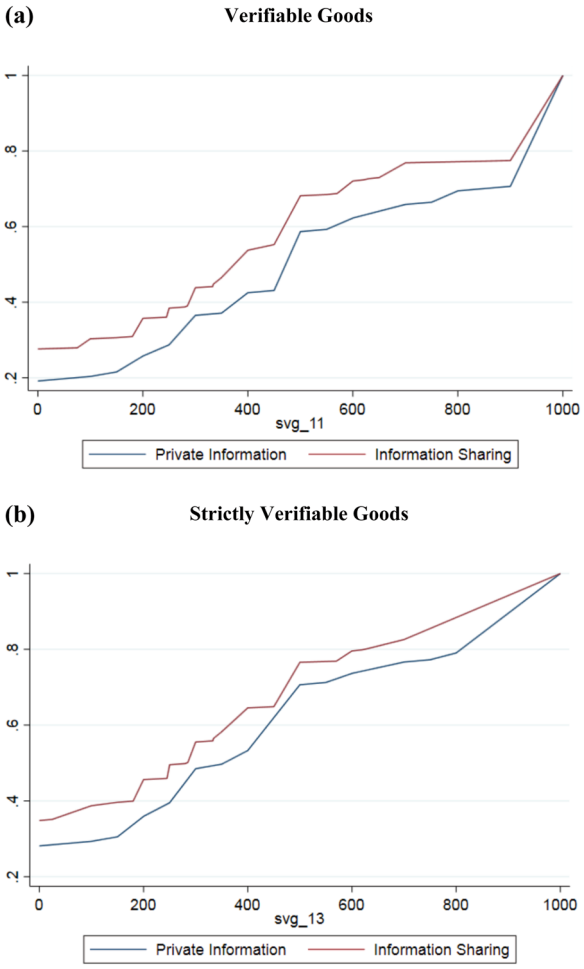

Fig. 4 Cumulative distribution function for monitoring goods—Scenario 1 *Private Information* (T1) vs Scenario 2 *Information Sharing* (T2 and T3)

monitor ex-post the MCCH who would feel compelled to implement the shared expenditure choices.

Significant changes in allocation choices are supportive evidence in favor of the signaling motive of in-kind giving by Prendergast and Stole (2001), where the giver adapts the gift to the recipient's preferences when observed, and as evidence against the public good model of in-kind giving.[13]

[13] When referring to the literature on remittance modeling, the migrant's strategic behavior can be interpreted as either self-insuring or altruistic by pleasing the MCCH when observed. These latter two motives are observationally equivalent in our analysis, and a competing test between them is not possible in this set up.

Since the information randomization occurred at the individual level,[14] to identify the impact of different information settings we can rely on the random assignment of information treatments across individuals, and estimate the following regression for each migrant *j*:

$$y_j = \alpha + \gamma InfoShared_j + \beta X_j + \varepsilon_j \quad (1)$$

where y_j is the monetary value of in-kind allocation in consumption or investment goods (and their subcategories) and verifiable or strictly verifiable allocations. $InfoShared_j$ is a dummy variable and denotes that individual *j* was assigned to information Scenario (2) *Full Information Sharing*—where the migrant knows that all the choices made will be revealed to the MCCH in the Philippines. Therefore, the parameter "α" is the mean allocation on the aggregate consumption or investment goods under Scenario (1) *Private Information*, and the parameter "γ" returns the difference in the allocation due to Scenario (2) when excluding the control variables. X_j are individual characteristics obtained from the baseline survey that serve as control variables. We include age as it may explain the increase in preferences for investment. The dummy *female* controls for the gender of the respondent. Family characteristics back home, such as having or not the spouse back home and the number of children in the Philippines, are also essential for the choices in the budget allocation. We approximate other individual exogenous variables (like health) with the level of income in Italy. We also include dummy variables to control for the different education levels.

Before proceeding with a detailed analysis, Table 5 shows that the different impacts of Treatments (2) and (3)—both aggregated in Scenario (2)—are not significant. The regressions estimate two separate values of γ for Treatment (2)—reported as *Information Sharing* in the Table 5a—and for Treatment (3)—*Information Sharing + Social Excuse* in the Table 5a, b—when addressing total consumption and investment. Although the estimates are different (e.g., 78 euros versus 133 euros for consumption goods), the variance is high and the F-test does not validate that the gap is significant. The *p* values reported at the bottom of Table 5a are never higher than 0.14. The last two columns (7) and (8) report the estimates when considering the difference between the allocations to consumption and investment and both confirm the non-significant gap between Treatment (2) and (3). The test of joint significance between the two Treatments also fails to reject the null when considering all expenditure categories together (the *p* value for the F-test is 0.943). In Table 5b the sample has been restricted to consider only individuals subject to Treatment (2) and (3), i.e., about 2/3 of the total sample. In this case the dummy identifies the Treatment (3) effect and the estimated γ is reported in the first line of Table 5b. Under all specifications the estimate, and therefore the difference between the two treatments, is never significant. Merging of the two treatment groups into the single Scenario (2) of full information sharing is then statistically legitimate.

[14] We verify the randomization where the variables included into the three treatments are not statistically different. See Table (9) in the Appendix B.

Given the test results in Table 5, in Table 6 we consider just one single effect for information sharing (or information symmetry) and report the estimated impact on the aggregates and some subcategories.[15]

Table 6a considers the impact of the unique information sharing on broad categories[16] as in Table 5. The migrants increase significantly (at the 95% significance level) the amount apportioned for consumption goods by 10.0–10.5% (i.e., between 99.79 and 105.1 euros out of 1000) when they share information about allocations with the MCCH. The contraction in investment mirrors the increase in consumption. The decrease is mainly due to the education share of the budget according to the last two columns of Table 6a. When the budget allocation for education is excluded, the contraction in investment goods is confirmed but is imprecisely estimated due to the wide reshuffling across the other items. When including other covariates as control variables, the significant parameters identify that female migrants tend to send more consumption and fewer investment goods independently of the information sharing (at the 90% significant level), whereas there is an opposite tendency (less consumption and more investment, especially for education) for migrants with a higher household income in Italy. The significant change in the bundle composition represents supportive evidence in favor of the signaling motive of in-kind giving by Prendergast and Stole (2001), where the giver adapts the gift to the recipient's preferences when observed.

Table 6b reports the regression results for model (1) when the breakdown of goods is referred to the ability of monitoring expenditures. Under *Information Sharing* migrants tend to decrease the portion of verifiable goods by about 7–9% (i.e., between 72.43 and 93.36 euros out of 1000); similarly, when we focus on strictly verifiable goods, the decrease is around 7% (i.e., between 70.40 and 71.89 euros out of 1000). This evidence supports also the other possible interpretation of our experiment, i.e., that migrants feel less constrained to choose monitoring goods in case of *Information Sharing*. They reckon that, although some in-kind expenses are easier to divert, the MCCH would not take advantage of less verifiable indications as the MCCH is somewhat more involved in the expenditure allocation by observing the choice list. When including other covariates, earning higher income in Italy lessens this tendency, similarly to the case of consumption.

3.3 Heterogeneity analysis: inter- versus intra-household transfers

According to our definition of MCCH, remittances can be all considered intra-household transfers. However, the head of the MCCH can be a very close relative (spouse, son or daughter) or a more distant one (e.g., parent, grandparent, cousin, uncle, etc.). Table 7 reports the composition of our sample in terms of kinship with the head of the recipient MCCH.

It is well-known that conditional cash transfers (CCT) programs tend to target one key individual in the family by assuming that the transfer is passed along as an intra-household transfer. Hence, were these programs based on a correct hypothesis, a significant difference should arise between intra- and inter-household transfers.

[15] The sum is not 1000 as we allow the migrant to suggest personalized items.

[16] Regression results on the various subcategories are reported in Appendix C.

Table 5 Regression results for total consumption and investment (Treatment 1, 2, and 3) and test of significant difference between Treatment 2 and Treatment 3

Panel (a) Total sample

Variables	(1) Cons. goods	(2) Cons. goods	(3) Inv. goods	(4) Inv. goods	(5) Inv. goods (no education)	(6) Inv. goods (no education)	(7) Cons. – Invest.	(8) Cons. – Invest.
Information sharing	77.51** (38.20)	78.18** (38.82)	−76.61** (38.20)	−64.99* (39.21)	−50.65 (42.69)	−42.45 (42.88)	154.1** (76.40)	131.0* (78.41)
Information sharing + social excuse	132.8*** (39.04)	122.2*** (39.84)	−136.1*** (39.05)	−113.7*** (40.29)	−67.46 (41.34)	−24.74 (43.39)	268.9*** (78.07)	224.7*** (80.56)
Age		0.269 (1.892)		−0.157 (1.910)		−3.561 (2.168)		0.323
Female		66.14* (38.80)		−75.33* (39.29)		−80.27* (42.16)		149.7* (78.59)
Head of MCCH is spouse		−47.89 (41.09)		38.64 (41.65)		12.79 (43.71)		−76.69 (83.34)
Have children in Philippines		−2.391 (2.035)		1.567 (2.052)		2.973 (2.174)		−3.071
Years since migrated to Italy		−0.579 (2.496)		0.246 (2.515)		2.500 (2.906)		−0.547 −0.141***
Household income in Italy		−0.0673*** (0.0257)		0.0707*** (0.0258)		0.0390 (0.0336)		(0.0515)
Primary education		270.7 (169.6)		−262.3 (169.7)		−205.4* (120.0)		526.1 (339.4)
Secondary education		2.594 (40.86)		5.233 (41.16)		62.24 (46.56)		−9.507 (82.33)
Constant	315.1*** (26.26)	383.5*** (100.5)	684.6*** (26.27)	617.5*** (101.1)	339.6*** (29.89)	344.1*** (106.8)	−369.4*** (52.53)	−234.6 (202.1)
***p values for testing*Treatment 2= Treatment 3**	**0.1682**	**0.2855**	**0.1380**	**0.2382**	**0.6875**	**0.6796**	**0.1524**	**0.2567**
Observations	500	476	500	476	500	476	500	476
R-squared	0.023	0.081	0.024	0.075	0.006	0.073	0.023	0.075

Panel (b) Restricted sample (only Treatment 2 and 3)

Variables	(1) Cons. goods	(2) Cons. goods	(3) Inv. goods	(4) Inv. goods	(5) Inv. goods (no education)	(6) Inv. goods (no education)
Information sharing + social excuse	55.28 (40.06)	48.43 (41.39)	−59.49 (40.05)	−54.04 (41.39)	−16.81 (41.77)	21.46 (42.96)
Age		−1.430 (2.390)		1.618 (2.388)		−2.184–2.603
Female		67.72 (51.15)		−71.34 (51.15)		−107.5** (54.43)
Head of MCCH is spouse		−20.74 (56.42)		21.67 (56.33)		−12.47 (56.27)
Have children in Philippines		−0.568 (2.804)		0.487 (2.799)		1.356–2.934
Years since migrated to Italy		2.586 (3.153)		-2.673 (3.150)		0.353–3.427
Household income in Italy		−0.0471 (0.0294)		0.0464 (0.0296)		0.0715** (0.0324)

Table 5 continued

Panel (b) Restricted sample (only Treatment 2 and 3)						
Variables	(1) Cons. goods	(2) Cons. goods	(3) Inv. goods	(4) Inv. goods	(5) Inv. goods (no education)	(6) Inv. goods (no education)
Primary education		413.0*** (98.61)		−409.2*** (99.19)		−119.8 (146.1)
Secondary education		15.52 (54.09)		−18.37 (54.12)		71.11 (59.98)
Constant	392.7*** (27.74)	−1.430 (2.390)	607.9*** (27.74)	601.7*** (121.0)	289.0*** (30.48)	333.5*** (128.4)
Observations	333	316	333	316	333	316
R-squared	0.006	0.056	0.007	0.058	0.001	0.074

Robust standard errors in parentheses

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Interview places fixed effect included; Reference category for education is tertiary education; **Consumption goods** include: Food, Clothes, Rent, Repair House, Utilities, Phone, Vehicle, Durables, Marriage, Insurance, and Medical Expenses. **Investment goods** include: Down payment, Mortgage, Savings for (land, house, vehicle, marriage and other), Long-term investments, Agricultural input, Business inputs and Education

Table 6 Regression results—Scenario 1 *private information* (reference) vs Scenario 2 *information sharing*

Panel (a): Consumption and Investment goods[a]

Variables	(1) Consumption goods (all)	(2) Consumption goods (all)	(3) Investment goods (all)	(4) Investment goods (all)	(5) Investment goods (no education)	(6) Investment goods (no education)
Information sharing	105.1*** (33.02)	99.79*** (33.47)	−106.3*** (33.04)	−88.87*** (33.95)	−59.03 (36.43)	−33.76 (37.39)
Age		0.457 (1.885)		−0.365 (1.902)		−3.486 (2.192)
Female		65.57* (38.85)		−74.71* (39.34)		−80.50* (42.13)
Head of MCCH is spouse		−47.28 (41.25)		37.96 (41.83)		13.03 (43.66)
Have children in Philippines		−2.344 (2.009)		1.515 (2.027)		2.992 (2.175)
Years since migrated to Italy		−0.600 (2.500)		0.270 (2.518)		2.491 (2.908)
Household income in Italy		−0.0681*** (0.0254)		0.0715*** (0.0255)		0.0387 (0.0336)
Primary education		263.5 (168.6)		−254.4 (168.4)		−208.3* (119.5)
Secondary education		−0.457 (40.91)		8.604 (41.24)		61.01 (46.46)
Constant	315.1*** (26.23)	234.3* (127.2)	684.6*** (26.24)	776.2*** (127.9)	339.6*** (29.86)	715.3*** (145.3)
Observations	500	476	500	476	500	476
R-squared	0.019	0.079	0.019	0.072	0.005	0.073

Panel (b): Monitoring goods[b]

Variables	(1) Verifiable goods	(2) Verifiable goods	(3) Strictly verifiable goods	(4) Strictly verifiable goods
Information sharing	−93.36*** (35.49)	−72.43** (36.61)	−70.40** (34.64)	−71.89** (36.39)
Age		−0.123 (2.041)		0.280 (2.026)
Female		−24.32 (41.90)		−17.89 (40.75)
Head of MCCH is spouse		59.79 (43.69)		56.79 (44.60)
Have children in Philippines		1.405 (2.036)		−1.482 (1.987)
Years since migrated to Italy		−0.703 (2.686)		−1.888 (2.597)

Table 6 continued

Panel (b): Monitoring goods[b]

Variables	(1) Verifiable goods	(2) Verifiable goods	(3) Strictly verifiable goods	(4) Strictly verifiable goods
Household Income in Italy		0.0827** (0.0322)		0.0220 (0.0345)
Primary education		−81.95 (188.5)		−86.76 (197.6)
Secondary education		−23.30 (43.66)		−17.08 (42.75)
Constant	525.4*** (29.03)	448.4*** (102.7)	422.2*** (28.47)	471.2*** (102.7)
Observations	500	476	500	476
R-squared	0.014	0.039	0.008	0.027

Robust standard errors in parentheses

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

[a]Interview places fixed effect included; Reference category for education is tertiary education; **Consumption goods** include: food, clothes, rent, repair house, utilities, phone, vehicle, durables, marriage, insurance, and medical expenses. **Investment goods** include: down payment, mortgage, savings for (land, house, vehicle, marriage and other), long-term investments, agricultural input, business inputs and education

[b]Interview places fixed effect included; Reference category for education is tertiary education; **Verifiable goods** include: utilities payment, durables, car or vehicles, medical expenditure, saving to buy a house, saving to buy land, current mortgage, saving to buy a vehicle, saving for marriage, long-term investments, agricultural inputs, education expenses; **Strictly verifiable goods** include: durables, car or vehicles, saving to buy a house, saving to buy land, saving to buy a vehicle, saving for marriage, education investment

Table 7 Relationship between the migrant and the head of the recipient MCCH

Kinship	Frequency	Percent
Intra-hh		
Spouse	113	22.60
Son	31	6.20
Daughter	44	8.80
Inter-household		
Parents	148	29.60
Grandparent	9	1.80
Grandchildren	2	0.40
Sister/brother	86	17.20
First cousin	2	0.40
Aunt/uncle	11	2.20
In-law	37	7.40
Other	17	3.40
Total	**500**	**100.00**

In Table 7 we propose a distinction between what can be defined a strictly intra-household relation (spouse, son or daughter)—see the "*Intra-hh*" group of Table 7—and kinship that could mimic an inter-household relationship. We have used this breakdown to estimate the same model (1) but including control dummies for the interaction between the intra-household nature of the transfer and the information scenario.

We vary model (1) and include the dummy variable for the intra-household characteristic of the relationship ($Intrahh_j$) and its interaction with *Information Sharing* ($Intrahh_j * InfoShared_j$):

$$y_j = \alpha + \mu Intrahh_j + \delta Intrahh_j * InfoShared_j + \gamma InfoShared_j + \beta X_j + \varepsilon_j \quad (2)$$

We are interested in the estimated values of the parameters μ and δ that returns respectively the effect of being an intra-household transfer and the differential effect of *Information Sharing* in intra-household transfers.

Panel (a) of Table 8 reports the estimation for the consumption–investment breakdown. In intra-household relationships investment in education is significantly affected. Depending on the specification, the education choice is significantly higher for intra-household beneficiaries between 9% and 12% (91.3 and 119.4 euro out of 1000). This evidence confirms higher sensitivity of intra- rather than inter-household transfers for the education usage of funds and reinforces arguments in favor of CCT programs designed on transfers expected to be redistributed productively intra-household—e.g., transfers to mothers to increase or induce school attendance (see for instance Thomas 1990, Duflo 2003 and recently Bauchet et al. 2018).

The estimates for the consumption goods and for other investment-type goods (excluding education) show a negative effect—although only significant at the 10% level and in just one specification for investment—as if there is a reshuffling within the investment-type pool. Estimates of the parameter δ are negative, but not

Table 8 Regression results for intra- and inter-household transactions—Scenario 1 *private information* (reference) vs Scenario 2 *information sharing*

Panel (a) Consumption vs investment

Variables	Consumption goods				Investment in education				Investment goods excluding education			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Intra-household	−30.99 (32.62)	−54.17 (52.12)	−66.19 (49.80)	−92.90 (64.31)	91.33*** (32.12)	101.5* (54.31)	102.8* (55.74)	119.4* (71.65)	−61.99* (34.32)	−46.82 (59.56)	−40.25 (57.39)	−28.35 (73.28)
Info sharing		82.93* (44.51)		66.70 (45.68)		−30.66 (41.46)		−40.54 (42.49)		−52.20 (49.28)		−25.82 (49.93)
Intr-hh*Info-Sh		49.70 (66.48)		49.32 (66.57)		−21.03 (67.52)		−30.60 (70.13)		−32.22 (72.81)		−21.65 (74.09)
Age			1.209 (2.206)	1.408 (2.229)			1.455 (2.222)	1.334 (2.254)			−2.600 (2.570)	−2.677 (2.606)
Female			68.29* (39.47)	73.26* (39.63)			10.72 (38.03)	7.676 (37.91)			−79.98* (42.31)	−82.01* (42.24)
Head is spouse			2.515 (53.33)	9.389 (52.71)			−45.71 (57.52)	−49.92 (57.49)			46.52 (56.01)	43.74 (56.21)
Children in PH			−1.906 (2.039)	−1.630 (2.005)			−1.053 (1.710)	−1.221 (1.725)			3.012 (2.203)	2.903 (2.198)
Years in Italy			−0.679 (2.625)	−0.812 (2.595)			−1.501 (2.595)	−1.419 (2.602)			2.095 (3.010)	2.148 (3.011)
Hh income in IT			−0.0750*** (0.0260)	−0.0722*** (0.0255)			0.0371 (0.0343)	0.0354 (0.0332)			0.0386 (0.0331)	0.0374 (0.0338)
Primary edu			249.8 (189.0)	242.4 (174.2)			−30.81 (219.4)	−26.27 (209.8)			−217.5* (116.8)	−214.5* (119.8)
Secondary edu			−7.765 (41.41)	−0.953 (41.33)			−58.66 (37.81)	−62.82* (37.66)			68.10 (46.86)	65.38 (47.12)
Constant	396.8*** (21.00)	338.8*** (36.49)	433.8*** (98.46)	369.2*** (102.4)	279.1*** (18.88)	300.5*** (34.83)	270.3*** (90.27)	309.6*** (94.80)	323.6*** (22.54)	360.1*** (41.29)	294.7*** (107.7)	319.9*** (116.6)
Observations	500	500	476	476	500	500	476	476	500	500	476	476

Table 8 continued

Panel (a) Consumption vs investment

Variables	Consumption goods				Investment in education				Investment goods excluding education			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
R-squared	0.002	0.021	0.062	0.075	0.016	0.020	0.040	0.046	0.006	0.013	0.072	0.074

Panel (b) Monitoring goods

Variables	Verifiable goods				Strictly verifiable goods			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Intra-Household	46.77 (34.26)	66.74 (58.07)	65.54 (55.99)	106.7 (72.30)	94.46*** (33.50)	112.7** (56.98)	125.6** (55.76)	145.4** (72.48)
Information sharing		−72.41 (47.09)		−42.18 (47.66)		−47.40 (44.46)		−54.29 (46.16)
Intra-hh*Info-sharing		−42.94 (71.79)		−71.05 (73.02)		−36.64 (70.47)		−36.88 (72.92)
Age			−1.028 (2.358)	−1.137 (2.373)			−1.736 (2.322)	−1.900 (2.352)
Female			−19.53 (42.27)	−24.24 (42.16)			−11.67 (41.14)	−15.58 (40.88)
Head of MCCH is spouse			18.68 (57.90)	12.45 (57.40)			−29.07 (58.38)	−34.51 (58.09)
Have children in Philippines			1.800 (2.047)	1.591 (2.049)			−0.948 (1.947)	−1.170 (1.978)
Years since migrated to Italy			−0.319 (2.769)	−0.216 (2.772)			−1.016 (2.672)	−0.909 (2.681)
Household income in Italy			0.0865*** (0.0330)	0.0841** (0.0326)			0.0274 (0.0360)	0.0252 (0.0348)
Primary education			−74.41 (206.0)	−66.49 (194.3)			−68.33 (218.0)	−62.60 (205.0)
Secondary education			−24.17 (44.17)	−29.75 (44.20)			−24.35 (42.75)	−29.79 (42.90)
Constant	445.7*** (21.62)	496.3*** (39.39)	405.8*** (100.6)	449.6*** (106.7)	339.8*** (20.33)	372.9*** (37.26)	452.2*** (101.1)	504.6*** (107.5)
Observations	500	500	476	476	500	500	476	476
R-squared	0.004	0.017	0.034	0.044	0.016	0.023	0.030	0.038

Robust standard errors in parentheses

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$; see footnote to Table 6

significant and no appreciable effect of *Information Sharing* within the intra-household dimension is detected.

Panel (b) reports the estimates for the monitoring goods. In this case intra-household transfers include a significantly higher portion of strictly verifiable goods between 9.4 and 15% (94.5 and 145.4 euros out of 1000). The portion is higher also for generally verifiable goods, but estimates are very imprecise. Also in this case *Information Sharing* has a negative but not significant effect. This result could be interpreted as if the migrant has a considerable degree of attention when choosing what to transfer intra- versus inter-household.

4 Conclusions

Information sharing plays a relevant role in migrants' choices on the destination of resources for their recipient families. Migrants increase significantly the portion of consumption goods by 10.0–10.5% (i.e., between 99.79 and 105.1 euros out of 1000) only when they are observed by their recipients and the information on the composition of the budget is shared. This is evidence both of preference dissimilarity between the migrant and the recipient family, and of the signaling motive for giving (Prendergest and Stole 2001).

Moreover, information sharing can induce strategic behavior: the migrant would prefer a smaller portion of goods that are (strictly) verifiable ex-post since she counts on the household-recipient feeling more compelled to follow the expenditure choices. Indeed, the budget for (strictly) verifiable goods is about 7–9% lower under information sharing.

Finally, in the case of intra-household transfers we have found a significantly positive bias for investment in education (and for verifiable goods). This provides evidence in favor of the intra-household design of conditional cash programs that target education.

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Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest.

5 Appendix A. Part of the survey instrument

***The game explanation:**

Please tell us how would you like your MCCH to receive the €1000. We are not going to give the money in cash, but in the way you tell us. It could be **anything that**

you want us to give to them (**not what you think your family would want**). What you tell us will not affect the probability of wining for your family, since the winner will be selected randomly.

Tell us what you really want us **to give to your MCCH**. Think well, and tell us all what you really want, since if you win, **that is exactly what we are going to give them**. It could be any type of expense or type of savings/investments. If this choice is selected to be implemented, a project staff member will accompany each beneficiary to purchase the item or pay for the expense specified.

It could be several things, but the total amount must add up to €1000.

The important thing is that **this is what you want** for your MCCH.

Items	**Euro**
1. **Food**	☐ 1 _____
2. **Clothes**	☐ 2 _____
3. **Rent payment**	☐ 3 _____
4. Down payment on a house/land	☐ 4 _____
5. Current mortgage on a house/land	☐ 5 _____
6. **Construction of a house (including repairs)**	☐ 6
7. **Medical expenditure and medicines**	☐ 7 _____
8. Education expenses (tuition, books, etc).	☐ 8 _____
9. **Utilities payment (electricity, water, etc.)**	☐ 9 _____
10. **Phone (house, cell phone, calling cards)**	☐ 10 _____
11. Agricultural inputs	☐ 11 _____
12. Business expenses	☐ 12 _____
13. Savings[20]: (*must state purpose*)	
13a. To buy a house	☐ 13a _____
13b. To buy land	☐ 13b _____
13c. To buy a vehicle	☐ 13c _____
13d. Marriage expenses	☐ 13d
13e. Others, specify: _____	☐ 13e _____
14. Long-term investments (e.g., time deposit for 1 year+, mutual funds, stocks/shares).	☐ 14 _____
15. **Large goods for the household (durables)**	☐ 15 _____
16. **Car or other vehicle**	☐ 16_____
17. Emigration expenditures	☐ 17 _____
18. Insurance (life, health, etc.)	☐ 18 _____
19. **Marriage expenses**	☐ 19 _____
20. Others, specify:_____	☐ 20 _____

[20]A special savings account will be opened in the Philippines where the money can only be withdrawn once a target amount has been reached that is then used to purchase the item specified. Funds cannot just be withdrawn in cash.

What is the name of the head of your MCCH? _____ What is your relationship to this person? *[Before marking the answer, repeat:] ***: Name of the head of his/her MCCH is his/her:***

1. Spouse
2. Son
3. Daughter
4. Parents
5. Grandparent
6. Grandchildren
7. Sister, Brother
8. First Cousin
9. Aunt, Uncle
10. In-law
11. Other (Specify): _____

6 Appendix B. Balance tests

See in the Table 9.

7 Appendix C. Additional regression analysis on subcategories

Table 10 shows the same regression analysis when the dependent variables are the various groups of consumption goods. We start with the budget destined to basic consumption, and then, we include durables and services (see Table 1 for the composition of the subgroups). As the readjustments occur across different consumption groups, the analysis on the larger inclusive sets allows for more precise estimations of the effect of the two information scenarios.[17]

The first significant effect is observed for basic consumption: when there is information sharing with the MCCH the budget for basic consumption increases by 50 euros or approximately 25% with respect to the case of private information (see column (1)). When adding durables (columns (3) and (4)), the effect increases to 113 euros or an increase of approximately 30%. Finally, when adding services (columns (5) and (6)), the results replicate the first two columns of Table 6 hence reverting to a slightly lower value. The stronger effect of durables is partly expected because it is a type of consumption good that resembles the most an investment good and that the migrant can also use when she returns.

[17] For the single aggregate items, the effect of Scenario 2 will be positive but characterized by standard errors so large that the statistics is not significant. We interpret this result as evidence of reshuffling across grouped items. Other results on the single items are available upon request.

Table 9 Balance test across treatments

	Treatment 1	Treatment 2	Treatment 3	Difference (T1 vs T2)
	Mean	Mean	Mean	*p* value
Migrant is a female	0.75 (0.44)	0.72 (0.45)	0.72 (0.45)	**0.81**
Migrant's age	42.92 (9.66)	40.47 (9.35)	43.36 (10.75)	**0.02***
Migrant is married	0.71 (0.45)	0.65 (0.48)	0.67 (0.47)	**0.49**
Migrant's number of children	2.20 (1.57)	1.77 (1.32)	1.88 (1.46)	**0.02***
Migrant's year in Italy	9.47 (8.28)	9.51 (8.63)	9.98 (8.75)	**0.837**
Head of MCCH is spouse	0.28 (0.45)	0.19 (0.39)	0.22 (0.41)	**0.14**
Primary education	0.05 (0.07)	0.05 (0.77)	0.06 (0.07)	**0.99**
Secondary education	0.20 (0.40)	0.18 (0.38)	0.12 (0.33)	**0.16**
College/university	0.64 (0.47)	0.71 (0.45)	0.75 (0.43)	**0.10**
Migrant's monthly Income	1038.81 (476.80)	1059.38 (668.91)	1032.10 (535.45)	**0.90**
Household efficiency	384.73 (288.46)	392.21 (313.54)	398.07 (330.84)	**0.92**

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Table 11 reports the results for the budget allocations for investment. Starting from residential investment and adding successively financial investment and business investment the effect of information sharing is negative, but very imprecise. It becomes statistically significant only when including the (large) education portion of the budget. This result was anticipated in Table 6, and it is confirmed for all of the other sets of budget items related to investment.

When adding various controls (i.e., being of female gender, the head of the MCCH is his/her spouse, having children in the Philippines, migrant's income in Italy, education level, place-of-the-interview fixed effects), the results are robust. The variable detecting the degree of integration in Italy, as the level of household income in Italy, is statistically significant and leans against the general effects, i.e., it has negative effects on consumption items and a positive and significant effect on investment. Instead, for the migrants with just primary education, there is a tendency to favor consumption over investment, meaning that the education level of the migrant plays an important role in the composition of the remittance bundle.

Table 10 Regression results for consumption groups—Scenario 1 *Private Information* (reference) vs Scenario 2 *Information Sharing*

Variables	(1) Consumption good (basic)	(2) Consumption good (basic)	(3) Consumption good(adding durables)	(4) Consumption good(adding durables)	(5) Consumption good(adding services)	(6) Consumption good(adding services)
Information sharing	49.67** (20.81)	42.57** (21.01)	112.9*** (27.51)	109.7*** (28.69)	105.1*** (33.02)	88.10*** (33.94)
Age		−0.577 (1.293)		1.412 (1.671)		0.358 (1.900)
Female		7.850 (26.35)		45.38 (33.86)		73.79* (39.34)
Head of MCCH is spouse		−40.53 (25.09)		−29.62 (36.71)		−37.43 (41.85)
Have children in Philippines		−1.749 (1.274)		−1.831 (1.596)		−1.456 (2.025)
Years since migrated to Italy		−1.837 (1.486)		−1.493 (2.115)		−0.322 (2.518)
Household income in Italy		−0.0136 (0.0168)		−0.0561** (0.0218)		−0.0707*** (0.0255)
Primary education		332.4** (160.1)		260.1* (153.1)		256.5 (168.5)
Secondary education		63.12** (30.21)		30.93 (36.04)		−7.386 (41.24)
Constant	154.3*** (16.09)	150.5* (83.25)	206.1*** (21.10)	157.5 (118.6)	315.1*** (26.23)	223.8* (127.9)
Observations	500	476	500	476	500	476
R-squared	0.010	0.102	0.029	0.081	0.019	0.071

Robust standard errors in parentheses

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Interview places fixed effect included; Reference category for education is tertiary education

Consumption goods include: Food, Clothes, Rent, Repair House, Utilities, Phone, Vehicle, Durables, Marriage, Insurance, and Medical Expenses

Table 11 Regression results for investment groups—Scenario 1 *Private Information* (reference) vs Scenario 2 *Information Sharing*

Variables	(1)	(2)Residential investment	(3)(1) + Financial investment	(4)(2) + Financial investment	(5)(3) + Business investment	(6)(4) + Business investment	(7)(5) + Education investment	(8)(6) + Education investment
Information Sharing	−16.63 (18.57)	−12.01 (18.88)	−32.88 (27.39)	−10.32 (27.70)	−59.03 (36.43)	−33.76 (37.39)	106.3*** (33.04)	−88.87*** (33.95)
Age		−2.787*** (1.003)		−3.165** (1.436)		−3.486 (2.192)		−0.365 (1.902)
Female		10.59 (18.58)		−6.102 (29.69)		−80.50* (42.13)		−74.71* (39.34)
Head of MCCH is spouse		54.95** (27.31)		41.32 (33.63)		13.03 (43.66)		37.96 (41.83)
Have children in Philippines		−0.299 (1.071)		2.283 (1.591)		2.992 (2.175)		1.515 (2.027)
Years since migrated to Italy		−0.414 (0.964)		0.648 (1.891)		2.491 (2.908)		0.270 (2.518)
Household Income in Italy		0.00143 (0.00902)		0.0621** (0.0308)		0.0387 (0.0336)		0.0715*** (0.0255)
Primary Education		−22.23 (15.30)		−4.851 (95.17)		−208.3* (119.5)		−254.4 (168.4)
Secondary Education		8.019 (24.67)		12.46 (34.42)		61.01 (46.46)		8.604 (41.24)
Constant	69.58*** (15.73)	193.9* (115.2)	159.1*** (22.77)	503.8*** (166.3)	339.6*** (29.86)	715.3*** (145.3)	684.6*** (26.24)	776.2*** (127.9)
Observations	500	476	500	476	500	476	500	476
R-squared	0.002	0.054	0.003	0.070	0.005	0.073	0.019	0.072

Robust standard errors in parentheses

***$p < 0.01$, **$p < 0.05$, *$p < 0.1$

Interview places fixed effect included; Reference category for education is tertiary education;

Investment goods include: Down payment, Mortgage, Savings for (land, house, vehicle, marriage and other), Long-term investments, Agricultural input, Business inputs and Education

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