Income Hiding and Informal Redistribution: A Lab-in-the-field Experiment in Senegal

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Abstract

Informal redistribution is widespread and essential for households' risk management in absence of well-developed financial markets. However, the costs associated to these interpersonal transfers are still under-explored in the economic literature. In this paper, we identify the distortionary effects of social obligations for redistribution on individual resource allocation choices, through exogenous variations on one hand of the share of unobservable income and on the other hand, of the pool of observers. We conduct an original experiment combining both a lab-in-the-field and a randomized controlled trial in poor urban communities in Senegal. Our first contribution is to elicit in the lab the willingness-to-pay to hide lottery gains from kin and neighbors. We find a high willingness-to-pay to hide: 65% of subjects have a preference for income privacy and are ready to forgo 14.3% to keep their gains private. Our second contribution is to estimate the impact of the income hiding strategy on resource allocation decisions of participants out of the lab. Individuals able and willing to hide are found to transfer 27% less of their income and to reallocate this extra money in private expenditures.

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1 Introduction

In countries with limited or no access to formal financial markets and to public redistribution, individuals are structurally vulnerable to life risks and economic shocks. They rely heavily on social networks as channels for informal redistribution and risk-sharing. Behavioral responses to these redistributive obligations, akin to an informal tax, can lead to strong distorsive effects on resource allocation and accumulation: anecdotal and more qualitative evidence shows that strategies to reduce the pressure to redistribute are widespread and often costly (Baland et al., 2011; Boltz and Villar, 2013; Platteau, 2000, 2006, e.g.). Rigorous causal evaluations of such an assessment are however scarce given the difficulty to properly identify social networks and their underlying redistributive pressure. A pionneer paper, Jakiela and Ozier (2012) relies on the variation in the observability of income to identify the effect of redistributive obligations.

Building on this work, the present paper is aimed at identifying the potential distortive effects of social obligations for redistribution on individual resource allocation choices. It relies on an original experiment combining both a lab-in-the-field and a randomized controlled trial conducted in poor urban communities in Senegal. We elicit in a lab experiment preferences for income privacy for all randomly-chosen participants and we measure the effect of hidden income on resource allocation choices made out of the lab a week after. We are thus able to explore the heterogeneity in the effect across the *ex ante* preferences for hidden income.

Informal risk-sharing arrangements are prevalent in contexts with scarce access to financial markets, low welfare-state provision and structural vulnerability of household incomes to shocks, like Sub-Saharan Africa, and as been well documented in the economic literature, (Coate and Ravallion, 1993; Dercon and Krishnan, 2000; Fafchamps, 1992; Kimball, 1988, e.g.). It translates into transfers of various types (monetary and non-monetary) between individuals of a common social network –mainly based on kinship, friendship, professional and geographic proximity. The extended family plays a preponderant role in this risk-sharing, which helps to protect against certain risks, in particular idiosyncratic ones, although full risk-sharing is almost never achieved[1]. Informal transfers are not all motivated by reciprocal risk-sharing. It can take the form of credit arrangement within the extended family over the life cyle as found in Cameroon (Baland et al., 2015). Customs, social prestige seeking, pure altruism or well-internalized norms are other motivations for inter-personal transfers, typically from better-off towards worse-off people (Wright, 1994).

In our country of study, Senegal, interpersonal transfers are widespread and mostly concentrated within the extended family[2]. However, the question of the effect of redistributive obligations is not specific to the Senegalese context. Platteau (2014) provides numerous references from the sociological and anthropological literature describing the prevalence of redistributive norms and

[1] For a review, see: Cox and Fafchamps (2007).

[2] In the nationally representative "Poverty and Family Structure" survey, 70% of the transfers sent to individuals outside the household are taking place among kin.

coping strategies – the strategy we analyze being one of the most widespread – in the whole African continent and more largely in all lineage-based societies. This suggests that the focus of this paper on informal redistribution in Senegal has implications for other countries as well and is not specific to this society or to Muslim countries. Moreover, studies in other African countries such as in Ghana (Castilla and Walker, 2013), in Kenya (Jakiela and Ozier, 2012) or in Burkina Faso (Hadness et al., 2013) but also on other continents, such as in the Philippines (**?**) show that there is a propensity to hide resources even within the household.

Our original experiment took place in May and June 2014 in 7 poor urban areas of Pikine, a densely populated urban department of the region of Dakar, for a randomly selected sample of 947 individuals. It combines both a lab-in-the-field and a randomized controlled trial. The experiment started by a baseline survey carried out in each community on a randomly selected sample of individuals who were all invited to participate to the lab a few days later. The lab-in-the-field part of our experiment was twofold: we first elicited the willingness-to-pay to hide income for each participant, and we then proceeded to a public lottery where some participants had the option to keep part of their lottery gains unobserved from other participants. For the randomized controlled trial we identified the effects of private income on out-of-the-lab resource allocation choices, by re-surveying all subjects one week after the lottery. Another interesting feature of our experiment is that we further randomized within each household the number of participants (one or two), allowing us to study the channels of decision making within the household.

We find a high willingness-to-pay for hiding: 65% of subjects prefer to receive their gains in private rather than in public and they are ready to forego on average 14.3% of their unobserved income for privacy. Also, we find that the determinants of the willingness-to-pay to hide income are correlated with redistributive pressure but differ across gender. Among subjects with preferences for privacy, lottery private winners are found to spend more on private expenditures and to transfer 27% less to kin than lottery public winners. Women in poor households invest a lower share of their income when they are able and willing to hide, suggestive of investment being a strategy to gain more control over her resources and to transfer less. Moreover, our second source exogenous variation, being selected in household pair or not, induces a reduction of the individual share devoted to intra-household transfers when the total household gains increase. This is in line with several potential channels: an household income effect, aversion to inequality and direct effect of an increase redistributive obligations[3]. Furthermore, controlling for the household income, being selected in household pair instead of being selected alone increases the share devoted to tranfers to kin out of the household, suggestive of higher demands for transfers from the extended family in the community.

Only a few papers in the literature have attempted to identify the distortive role of social norms for redistribution of resource allocation in and out of the household in a controlled lab exper-

[3]We are not able to disentangle these channels for the moment.

iment in the field framework. Jakiela and Ozier (2012), using wind-fall income, explored how observability among participants from the same community in rural Kenya affects investment choice within the lab and show that women with kin participating in the experiment were willing to hide more. However, the experiment suffers from self-selection of the pool of participants in the lab and does not look at how income observability affects non-investment allocation choices out of the lab. Goldberg (2010) conducted two lotteries among agriculture clubs in Malawi, one private and one public. The objective of the paper is to identify to what extent preference for present can be related to the observability of income by peers. She measures differences in expected use of the windfall income between the two lottery-winner types and finds that public lottery winners spend 35% more than private winners directly after the lottery. She also re-surveyed her sample a few months later to estimate the variations between expected and actual use of the windfall income but faced a very high attrition rate. Finally, Castilla and Walker (2012, 2013) look more specifically at how income unobservability may distort income pooling within the household between spouses. They carried out in Ghana a field experiment where spouses in rural villages were randomly allocated windfalls either in cash or in kind, with half of the prizes awarded in public and the other half in private. They show that spouses behave non-cooperatively and that the effect of prize-winning on out-of-the-lab expenditures varies depending on the publicity of the prize and the gender of the recipient.

Inspired by the pioneer experiments mentioned above, our paper contributes to this literature in at least five dimensions. First, we directly elicit preferences for hiding income for all participants, and not only for subjects in a specific treatment group. This enables us to identify the effect of winning a private prize versus a public and to test if this effect is heterogeneous in *ex ante* preferences for privacy. Second, we do not impose any transfer or investment decision in the lab setting because this would be too abstract or distorted from real life and narrow in terms of the variety of allocation choices available in the lab. We observe our resource allocation decisions out of the lab one week later, for all participants with an attrition below 3%. Third, thanks to the random *ex ante* selection of participants at baseline, we have an exogenous composition of the pool of participants in a same lab session. As opposed to most lab experiments in the field based on voluntary participation, we are able to control for the relatively low attrition between the selection and the lab phase, thanks to the baseline survey. Hence, the composition effect of the pool of observers of lottery outcomes, such as the number of direct kin or neighbors, is exogenous in our set-up. Fifth, and last important contribution, we are able to link the literature on intra-household non cooperative behavior, e.g. Castilla and Walker (2012), with the literature that looks at the role of redistribution beyond the household, within social networks. In our setting, we exogenously selected either one or two participants per household in the baseline. This enables us to explore potential mechanisms for decision-making under social obligations and to identify to what extent the overall results are affected by redistribution that takes place between household members or across households.

Finally, it is worth stressing that this paper contributes to a better understanding of the linkages

between social networks and investment and saving decisions in contexts of limited or no access to formal financial markets and thus brings to light on the possible causes of poverty traps in Sub-Saharan Africa. This is crucial for adequately targeting public policies for social protection and financial inclusion, as well as for designing relevant financial products in this context.

The remainder of the paper is organized as follows: Section 2 presents the experimental setting and Section 3 describes the experiment sample. In Section 4, we present the empirical strategies of two main parts: (1) the estimation of the willingness-to-pay for income unobservability and (2) the identification of the impact of income hiding on resource allocation are presented. Results of the first and second parts are discussed respectively in Section 5 and Section 6. Section 6 explores the channels of intra-household decision-making for transfers. Section 7 concludes.

2 Experimental Design

2.1 General setting

We designed this two-step experiment so as to answer two main questions. First, in the lab-in-the-field component we elicit the marginal propensity to pay to keep one's windfall income hidden from other participants of the community and then we proceed to a lottery. The second component is an RCT aimed at estimating the impact of the unobservability of lottery income on the choices of resource allocation, based on a follow-up survey conducted one week later.

The experiment was conducted from the end May till mid-June 2014, in 7 different poor communities in the department of Pikine, in the region of Dakar, Senegal[4]. The areas covered were urban, sometimes very densely populated. For each community, the experiment was conducted over two weeks. The first week we proceeded to the sample selection and the administration of both the household and individual baseline questionnaires and the lab phase was organized on Sundays. One week later, the enumerators went back to administer a questionnaire to subjects.

2.2 *Pre-lab* stage

The baseline sample was made up of 947 individuals surveyed in the 7 communities. The individuals were randomly selected based on a random walk sampling method that was followed by the enumerators[5]. A household was selected if at least two members satisfied the eligibility criterion: being between 18 and 60 years old and having ever earned some labor income[6]. Once this criterion was verified, the enumerator could start the household survey and proceed to the

[4]The survey lasted approximately three weeks. We selected the communities enough apart so as to prevent any learning or overlap in subject populations.

[5]Each enumerator was assigned one or two blocks of dwellings and a starting point; he/she had to follow a strict rule: only every other habitation was pre-selected. If this dwelling had only one floor, and if more than one household was living there, the household living at the right after the entrance was pre-selected. In case of a dwelling with several floors, first the floor was randomly selected and then, the same rule of the right-hand side household was followed.

[6]If this selection criterion was not satisfied, the enumerator left the dwelling and started again the random walk procedure.

random selection of the player among the pool of eligible household members. Importantly, so as to ensure no possible *ex ante* manipulation in the selection of participants, the enumerator would not mention any lottery gain and would not proceed to the random draw of the players before having established the complete roster of household members.

We introduced an additional layer of heterogeneity in our study by varying randomly the number of individuals selected per household: in one selected household out of two, only one player was selected while two players were selected in the next household[7]. This enables us to capture the intra-household dimension in the pressure for redistribution.

The household survey includes information on the household composition and on household expenditures. The individual questionnaire administered to each player provides us with data on socio-economic and demographic characteristics, social capital held in one's kinship and community network, and on personal assets and expenditures. At this stage, players were invited at a given hour on the following Sunday to pursue the survey; they were only informed that this would involve a few additional questions and a small lottery where everyone would get a small compensation for the time spent with us.

2.3 Lab experimental design

The lab phase took place on the Sunday following the baseline interviews in a primary school within the community so as to minimize travel cost[8]. In each community, there were four sessions at 9am, 11am, 1pm and 3pm. Players surveyed by the same enumerators, and therefore, from the same or nearby blocks were assigned to the same sessions. On average thirty players were invited to the same session. Importantly, the players were not aware of the lottery amounts at stake before the lottery day. Each session is split into three steps. First, all players from the same session are gathered in the same large room where everyone can observe who else is invited to participate. At this stage, they learn that they can gain at least 1000 FCFA and up to 9000 FCFA if they agree to pursue the interview with us. 9000F is a considerable gain: in this sample, 527 FCFA is the average per capita food expenditure for one day and the mean size of households is 11 members[9]. Second, each subject, who agrees to stay, is then invited one by one for a private interview in one of the eight separate small rooms, based on the order of arrival at the lab session. People are asked to make choices in order to establish their preference for income unobservability and then participate in a lottery[10]. Third, after all private interviews took place, all subjects of the session are gathered again in a large room where all public pay-offs are declared and distributed in front of all participants of the session.

[7] As indicated above, to be eligible, a household had to include at least two eligible members so that one-player households and two-player households were comparable

[8] Subjects had to walk between 5 to 10 minutes to get to the school.

[9] The average per capita food expenditure for one day in the department of Pikine is of 465 FCFA and the average household size is 13 according to PSF, a nationally representative survey of Senegal collected in 2006. Thus we selected slightly richer households or communities than the average ones

[10] if she refused to continue to participate, they player was told that she would receive 500 FCFA publicly at the end of the session

The first part of the private interview is devoted to questions on identifying who she knows among the participants at the session and what relationships she shares with those people. Then, the enumerator explains the rules of the lottery game, reading first the "consent"[11], in French or in Wolof, the dominant local language[12]. Subjects are shown all the potential cards they may draw from the lottery box. The enumerators place a particular emphasis on the difference between two types of cards: the "option cards" and the "no-option cards". The latter are respectively: receiving 1000 FCFA in public and nothing in private, receiving 9000 FCFA in public and nothing in private, and, finally, receiving 1000 FCFA in public and 8000 FCFA in private. Option cards are detailed below. Additionally, the participant is told that if she draws an option card, the outcome of the lottery is going to be conditional on her preferences, namely the choices she is about to make. We made the choice not to reveal the exact distribution of the cards in the lottery so as to protect people who were choosing to hide by making any inference about their actual income possible[13].

Elicitation of preferences for income unobservability

To elicit preferences for income unobservability, each subject is asked to make a series of choices illustrated by the option cards. On each card, two options are presented: option A corresponds to receiving 9000 FCFA in public, i.e. in the presence of the other participants of the session, while option B means receiving 1000 FCFA in public and 8000 FCFA minus some varying amount p, where p (price of the income hiding option) takes, in turn the value of 0, 200, 500, 700 and 1000 FCFA; in total the pay-offs for option B amount to 9000 FCFA minus p. Each choice, i.e. for each value of p, is asked one after the other, in ascending order, until reaching 1000 FCFA, no matter what the previous answer was. The various choices are shown in Table 8 in Appendix. The enumerator makes clear that some of these cards are in the ballot box, meaning that each choice the subject will make will potentially be implemented after the lottery[14]. Subjects showing multiple switches are re-explained the questions and the stakes of the choices; if they change their initial choices, the revised choices in addition to the initial ones are recorded. Choosing A for the first choice when $p = 0$ indicates a strong preference for income *observability*. For subjects ready to pay up to 1000 FCFA to get only 1000 FCFA in public, the enumerator asks the maximum amount the player was ready to forgo in order to get the minimum in public.

Lottery and pay-offs distribution

After all choices are made, the enumerator recalls that all no-option cards and *some* of these option cards are in the lottery box and if drawn, the decisions made will be implemented. For feasibility and power constraints, only two "option cards" are actually put in the box, the ones

[11] The consent is available upon request.

[12] Subjects who were neither French nor Wolof speakers, were given a translated version of the consent in their mother tongue as well.

[13] The more plausible and easier assumption about the expectations of the participants about the distribution of the cards is equal distribution of each type of cards.

[14] After the lottery draw, if the subject does not agree on her previous choice, he or she can leave the game with 500 FCFA.

with $p = 200$ and $p = 700$. However, this information is not revealed to subjects. The different cards included in the ballot box are presented in Table 9. As mentioned earlier, subjects do not know about the actual distribution of cards, so that they cannot infer how many people had actually chosen to hide when the public pay-offs were distributed. Moreover, inference about who did choose to hide is made impossible since everybody knows that some "unlucky" people get 1000 FCFA in public and nothing in private, irrespectively of their preference for income unobservability –the no-option card $LowPublic_{NO}$, where NO stands for no-option.

The distribution is fixed: in each session, there are 5 no-option cards with 1000 FCFA in public, 7 no-option cards with 9000 FCFA in public, 8 no-option cards with 1000 FCFA in public and 8000 FCFA in private, 9 option cards with the hiding price p set at 200 FCFA, 8 option cards with the hiding price p set at 700 FCFA[15].

Once everything is perfectly clearly explained and understood, the subject draws a card from the lottery box. If it is an option card, the enumerator recalls the choice made before and asked the subject whether he/she still agrees with his/her previous choice, indicating that the alternative is receiving 500 FCFA in public. The private gains are distributed in the private room in a separate envelope. A ticket is given to the subject stating the amount he/she will receive in public, namely 1000 FCFA or 9000 FCFA. Note that all participants received by design at least 1000 FCFA in public.

Lastly, additional questions are asked on the future use of the gains in an open question (so as not to influence any response in the lab or out of the lab behavior)[16] on how information concerning their gains is expected to spread in the community according to the subject and on the expected redistributive pressure he/she might face. Subjects after the private interview are then invited to wait in a separate large room until everyone has finished[17]. Once every interviewee of the sessions had played, the public gains were disclosed to the assembly and distributed publicly.

2.4 *Post*-lab survey

An originality of our experiment design, as compared to the literature is that we did not force any in-the-lab transfers. We measured in a framed lab setting the willingness to pay to hide one's income and then, varied exogenously who received the opportunity to hide or not. In order to measure the impact of the observability of personal gains by other participants on transfers

[15]However, since participation varied from one location to another and from one session to another, the final distribution of drawn cards is slightly different from the distribution in the lottery box. This difference is nevertheless totally random. Moreover, since there are eight rooms running simultaneously the private interviews, the 37 cards are distributed randomly in eight small lottery boxes in front of all participants when they are all gathered in room prior to the private interviews.

[16]We made clear to the enumerators and to the subjects that subjects were totally free to use their money as they wanted to. No explicit or implicit declaration was made so as to influence their answers in the lab and their choices out of the lab. However, we cannot eliminate the fact that the money was gained in a lottery and from French researchers, which may be different from real life income.

[17]Beverage were given to help people wait. On average, a session lasted 1 hour and a half, with a maximum of two hours.

and resource allocation decisions, we analyze spending decisions made out of the lab. One week later we visited the subjects to administer a short additional questionnaire on the expenditures and events of the past week. At the end of the survey, we asked how they specifically allocated the pay-offs of the gains in an open question. We put a particular emphasis on the identification of the recipient of transfers made by the participant, and especially if the latter also took part in the lab-experiment. Symmetrically, we listed the transfers received by the participant from other participants. Finally, what they learned about the pay-off of the other household member (if selected in pair).

3 Experimental Subjects

3.1 Sample description

Table 12 describes the sample of individuals that attended the experiment phase –thereafter: the "lottery sample"–, and tests if baseline characteristics are balanced across the cards giving the opportunity to hide "private cards", and card with no opportunity to hide "public" cards.

In this sample, two thirds of the players are women[18]. The average age is 37 years. Household heads account for 20% of the sample while spouses and children of the head represent each a quarter of the distribution. Two thirds of the subjects are married, among which 18% in a polygynous union. One fifth of the sample has no education and 40% contributes to the food expenditures of their households. The informal sector represents 86% of the last or current jobs held. Overall, most variables are not significantly different accross groups but some differences remain – ethnicity, marital statuses, having a responsability in the community and risk aversion – that we will control for in the subsequent empirical analysis.

3.2 Distribution of treatment and control groups

Table 10 presents the final distribution of drawn cards: 352 out of 797 subjects, i.e. 44.2%, received a share of their pay-offs in private either based on their previously elicited preferences ($Private_{p200,O}$, $Private_{p700,O}$) or not ($Private_{free,\ NO}$)[19]. The number of subjects who drew a public card at 1000 FCFA, $LowPublic_{NO}$, is smaller than the others since its primary role was to make sure that people could not infer whether players chose to hide or truly only received 1000 FCFA, as explained above. Players who drew a card with the possibility to hide for $p = 200$ FCFA (resp. $p = 700$ FCFA) had expressed a willingness-to-pay larger than 200 FCFA (resp. 700 FCFA) in 57% of the cases (respectively, 49%), which means that they accepted to hide at this price (Table 11). We observe only a very slight decrease in the demand for income unobservability between the two price levels.

[18] A great care was given to have both men and women in the sample, therefore all the experimental sessions took place on Sundays and enumerators were flexible about when to fill the baseline questionnaire –coming back when people, mostly men, were coming back from work, or very early in the morning before they left the house.

[19] In Table 10 we removed 19 inconsistent observations, in terms of preferences. These observations are also dropped in the subsequent tables and analyses.

3.3 Attrition between the pre-lab interview and the lab phase

Table 13 describes the attrition between the baseline and the lottery sample. The attrition rate is 13%. Individuals that did not come to the lottery live in smaller and richer households (in terms of daily food expenditure), with a relatively larger share of adults members. They are more likely to be single men that were not selected with another member of the household[20]. They are more educated, are more likely to work in the formal sector and to fund their personal expenses exclusively by their labor or capital revenues. These differences have to be taken into account for the rest of the analysis.

3.4 Attrition between the lab phase and post-lab interview

The attrition between the lab and the post-lab survey was very low: only 25 individuals were lost, representing 3% of the lottery sample. The main reason (16 observations) is that those people were traveling the week after the post-lab out of the Dakar region and not reachable for a face-to-face interview. Table 14 compares the characteristics of the attrited players (column 2) and the non-attrited ones (column 3) . The two groups are rather similar. Players who earned only 1000 publicly are however less likely to be re-interviewed[21].

4 Empirical strategy

4.1 The willingness-to-pay to hide income

Estimation of the price elasticity for income privacy

As described in the protocole, we adopted a standard approach à la Holt and Laury (2002) to elicit the willingness to pay to hide revenues in our experiment. Subjects had to choose between two options, A or B. Their 9000 FCFA payoffs were in option A always fully disclosed in public; in contrast, in option B, they could pay a price p which varied from 0 to 1000 FCFA to have only 1000 out of $9000 - p$ FCFA declared in public, the remaining part in private. To make these choices incentive compatible, we made clear to participants that in the lottery phase, their choices would be implemented if they drew a card corresponding to one of these choices.

The probability that subject i chooses to pay p, when p lies in $\{0, 200, 500, 700, 1000\}$, takes a standard logit form[22]. We estimate a panel random effect logit model since each individual was

[20] Part of this attrition among pairs come from the fact that no delay or report to the next session was tolerated for paired individuals in order to be sure to have the two paired individuals attending the same session.

[21] This is not worrisome to our study since as already mentioned above, this group mainly served in the lab phase to protect people choosing to keep a share of their income unobservable.

[22] We assume that the utility, U_{ik}, of subject i for choosing option $k = A$ or B, takes the form of an additive random utility model (ARUM) (see Hey and Orme (1994) and von Gaudecker et al. (2011), for modeling of stochastic choices in experimentes) : $U_{ik} = V_{ik} + \zeta_i + \epsilon_{ik}$, where ζ_i is an individual effect normally distributed with variance σ^2_ζ and ϵ_{ik} is an i.i.d. type 1 extreme value distributed preference shock, with variance $\sigma^2_\epsilon = \pi/3$. V_{ik} is the deterministic utility of choosing option k and is a linear function of observable characteristics X_i and price p: $V_{ik} = \alpha_k + X_i' \beta_k + \gamma_k p$.

asked to choose between options A and B for five different prices; the random individual intercept ζ_i captures the combined effect of all omitted subject-specific covariates that cause some subjects to be more prone to choose option B than others. This model allow us to estimate the price elasticity for income privacy controlling for observable characteristics of the subjects.

Estimation of the determinants to the WTP to hide income

We also estimate the determinants to the willingness to pay to hide, using as a dependent variable the maximum price people declared to be willing to pay to have the revenue partly unobservable. However, we only observe the *interval* in which this maximum price lies, for individuals with a WTP to hide smaller than 1000 FCFA[23]. Therefore, we run an interval-censored-data regression model[24], where the dependent variable is the price intervals implied by each question in the experiment[25]:

$$p \in \{\ ]-\infty; 0[\ ; [0; 200[\ ; [200; 500[\ ; [500; 700[\ ; [700; 1000]\ \}$$

for individuals with a willingness-to-pay below 1000 FCFA and their true willingness-to-pay otherwise. Let $p = X'\beta + \epsilon_i$ be the model we want to estimate. p is the vector of maximum price individuals are willing to pay to hide income: it is a continuous outcome, even if not observed on a continuum. Our model assumes $\epsilon \sim \mathcal{N}(0, \sigma^2 I)$. For observations i whose price $p_i \leq 1000$, p_i is observed in intervals, i.e. we only know that the true unobserved p_i lies in the interval $[p_{1i}, p_{2i}[$, where the list of intervals was given just above.

Finally, to investigate determinants of the extensive margin of preference for hidden income, we estimate a logit model. The dependant variable is a dummy equal to one if the player is willing to hide, i.e. has a positive WTP, and to 0 otherwise. We cluster the standard errors at the session level. The idea is to test whether the extensive margin is predicting most of the determinants for the WTP to hide. This will be important to back up the empirical strategy developed in the subsequent section, in which we explore the differential impact of hidden income on resource allocation between individuals with preference for hidden income and individuals with no such preference.

4.2 Estimation of the effect of hiding income

The second objective of this paper is to estimate the effect of hidden income on resource allocation choices made out of the lab. We aim to test whether individuals with a share of hidden gains are making different real-life choices of consumption or transfers than the ones with observable

[23] Individuals with a WTP to hide income larger than 1000 FCFA were asked what is their maximum price they are willing to pay to have only 1000 FCFA disclosed in public. We use this question to increase the precision of our estimates. Results are robust to the use of this extra information or to treat them as right-censored.

[24] An interval-data regression is similar to an ordered probit, except that here the interval boundaries are known. See Cameron and Trivedi (2010) (pages 548-550), for a discussion on the differences among censored and interval data models.

[25] Subjects who prefer having their payoffs observable even at a null price, we assume that they have a preference for income observability, subsequently a willingness to pay to keep income observable, namely a negative price $p \in [-\infty, 0[$.

gains.

We estimate the following system of equations for each commodity type g:

$$Y_{ig} = \alpha + \beta \, PrivateCard_i \; + X'_{ig} \, \gamma + \mu_c + \mu_s + u_{ig} \tag{4.1}$$

where Y_{ig} represents the share of the lottery gains dedicated to good g by individual i as reported by the individual one week after the lottery. We discuss further below the outcomes. Our key variable of interest, $PrivateCard$, takes 1 when the subject draws a card giving him or her the *opportunity* to hide. A $PrivateCard$ leads to actually hidden income, either irrespective of the preferences for private income when the no-option card, $T_{free,\ NO}$ is drawn, or conditionally on the previously stated preferences when either of the two option-card are drawn, $T_{p200,O}$; $T_{p700,O}$. The estimated coefficient β thus represents the Intention-to-Treat effect of private gains since not all subjects who drew a "private card" were willing to hide and thus actually did. μ_c and μ_s correspond respectively to fixed effects of the community and of the hour of the attended session. X_{ij} is a set of controls including socio-demographic and economic characteristics of the individual and his/her household, as well as some measure of his/her position in the kinship and in social networks in the community[26]. As this set of expenditure shares are correlated at the individual level (each share can be written as one minus the sum of all other shares), the error terms, u_{ig} in the regression equations are correlated and we estimate the system through a seemingly unrelated OLS regression (SUR) system.

Going one step further, we also investigate the heterogeneity of this effect across preferences for income privacy. Indeed, we expect the opportunity to hide to favor some expenses that could be constrained for individuals subject to a high redistributive pressure within her network. If the willingness-to-pay to hide income is positively correlated to this redistribution pressure, the effect of the "private card" should be driven by the sub-sample of participants with preferences for privacy. We therefore estimate equation (4.1) on the sub-samples of individuals with positive willingness-to-pay to hide income and of individuals with no or negative willingness-to-pay to hide income[27].

We further test for the heterogeneity in the impact of the opportunity to hide across the two

[26] We include sex, age, link to household head, religion, ethnicity, marital status, Koranic education, French or Arabic education, household size, share of adult members and of women in the household, sector of activity, average of labor income over last 3 months in log, contributor to household food expenditures, household total food expenditures per day and per capita in log, whether the house is not owned by the household. Additionally, we control for some commodity for whether the individual contributes to household daily food expenditures, whether he is the eldest among same-parents siblings, whether he was selected with another household member, has any kin the lab session (excluding the household pair), holds a responsibility in the community and holds a formal or informal salaried job. See notes under each table for detailed information on the specification per commodity share.

[27] We do not exploit the different prices since although the results are strengthened for higher WTP to hide, the coefficients are not statistically different from each others (see Table 27 in the Appendix). Moreover, it also involves looking at the effect on smaller samples. We thus prefer to focus on the dichotomous variation between positive and negative WTP to hide.

groups of willingness to pay (positive or strictly negative) by estimating the following equation:

$$Y_{ig} = \alpha + \beta_1 \, PrivateCard_i + \beta_2 \, \mathbb{1}_{(WTP \geq 0)i} + \beta_3 \, PrivateCard_i * \mathbb{1}_{(WTP \geq 0)i} + X'_{ig}\gamma + \mu_c + \mu_s + \epsilon_{ig} \tag{4.2}$$

where $\mathbb{1}_{(WTP \geq 0)}$ is a dummy variable that takes 1 when the player has a positive willingness-to-pay to hide income. In this specification, our parameter of interest is α_3 which tests the difference of the effect of the opportunity to hide between subjects with positive and non-positive preferences for income hiding.

4.2.1 Identification

Identification of the effect of the *PrivateCard* in model (4.1) on the whole sample totally relies on the randomness of the opportunity to hide in the lottery. Concerning the estimation of the same model on the sub-sample of individuals with positive and non-positive WTP to hide and of model (4.2), the identification of the effect relies on the exogeneity of the opportunity to hide in the lottery draw for a given preference. In other words, we posit that, conditional on a given *ex ante* stated preference, the likelihood to pick up a private card is random. Table 21 in the Appendix shows that the probability to draw a card allowing to hide gains is not correlated with preference for hiding income, irrespective of the inclusion of community, session and/or enumerator fixed effects.

In both specifications (4.1) and (4.2), we exclude the 1000 FCFA winners, therefore the possible lottery gains are 8300, 8700 and 9000 FCFA. We do not control for the lottery windfall income as certain values –8300 and 8700 FCFA – are obtained only when the willingness-to-pay to hide income is positive. We thus make here the assumption that the *shares* of the lottery gains allocated to the various commodities are not directly affected by the windfall income level differences –which is at maximum 700FCFA– but by preferences for hidden income and the random opportunity to hide. We test for this assumption in section 6.4 by restricting the analysis to the subsample of subjects who randomly won exactly 9000 FCFA: comparing the ones who received 9000 FCFA in public, $C_{9000,NO}$, and the ones who won 1000 FCFA in public and 8000 FCFA in private, $T_{free,NO}$, both irrespective of their preferences for income privacy. Table 28 in the Appendix presents the results.

4.2.2 Outcome variables: lottery gains allocation choices

To be able to assess the impact of the opportunity to hide resource allocation out of the lab, we exploit the survey conducted seven days after the lottery took place. In this survey, individuals were asked several questions –without any reference to the lottery– about the events over the past weeks in which they took part and about the expenses made. At the very end of the survey, each participant was asked in a open question what he or she did do with the lottery gains[28].

[28]Enumerators wrote the answer to this question literally, the answer was only coded after the survey. Special attention was given so as to not influence any answer from the respondent and to make sure each answer was correctly coded.

We rely on this question for the subsequent analysis[29].

Personal expenditures encompass expenses that concern exclusively the lottery winner. Health expenditures account for all health expenditures made by the individual – both for herself or for someone else. We consider also expenditures that benefit part or the whole household, distinguishing between food expenses –contribution to the usual food pot or purchase of some extras, e.g. candies, fruits, juices– and non-food expenses –e.g. contribution to the electricity bill, detergent. We separate transfers made to kin and non kin, among the kin we include both transfers within the household and to kin outside the household. In some specific tables, we explore the differences between transfers to kin within and outside the household. Investment accounts for any purchase made for an economic activity, be it for direct resale or as an input for any income-earning activity: for instance, for women it will often concern inputs they need for some home-made preparations that they will sell in the street or on the market. Finally, saved gains correspond to gains that are not used yet.

5 The willingness-to-pay to hide income

5.1 Measuring the WTP to hide income

The willingness-to-pay (WTP) for unobservable income can be directly recovered from the responses during the lab, before the lottery. It can be inferred from the choices made at each price $p \in \{0, 200, 500, 700, 1000\}$ and from the question asked to people who were ready to pay 1000 FCFA "what is the maximal amount they are ready to pay out of 9000 FCFA to get only 1000 FCFA in public and the remaining in private ?". This allows us to capture the maximal willingness to pay even for the individual who had very high preferences for income unobservability[30].

Table 1: Measures of the Willingness-To-Pay (WTP) to hide income

	Whole sample			**Sample with WTP $\geq$ 0**		
	All players	Women	Men	All players	Women	Men
N	788	534	254	512	345	167
Mean (in FCFA)	708	643	845	1089	994	1285
Median (in FCFA)	600	500	1000	1000	1000	1000
Std. Dev.	874	783	1026	871	774	1019

1000 FCFA = 1.52 EUR = 1.71 USD
Taking a conservative approach, the willingness-to-pay statistics are computed at the lower bound of the price interval. For example if a participant is ready to pay 200 FCFA but not 500 FCFA, her maximum WTP is registered as being equal to 200 FCFA.
The difference of the average WTP between men and women is significant at a 5% level.

[29] We discuss in a further section about the question of the fungibility of the gains.

[30] During the pilot phase, the take-up for $p = 200$ was 40% and 22% for $p = 500$ therefore we chose to range prices from 0 to 1000 FCFA. However, the results of the experiment show that we could have asked for higher prices. Our results are hence rather a lower bound of the WTP for income unobservability given our framing.

Measures of the elicited WTP to hide income in the lab are shown in Table 1. The average WTP to hide is of 708 FCFA for the whole sample, 643 FCFA for women and 845 FCFA for men, the difference being significant at the 5% level. The median of the WTP to hide is of 600 FCFA for the whole sample, it reaches 1000 FCFA for men, while 500 FCFA for women. 65% of players are willing to hide at a zero price and this rate is similar for men and women. Conditional on a positive WTP to hide, half of the sample of both men and women is ready to pay up to 1000 FCFA to have only 1000 FCFA in public and the remaining in private. On average, the willingness to pay to hide is 1089 FCFA (13.6% of the gains that could be hidden) ; women are ready to pay 944 FCFA (11.8%), whereas men are ready to pay 1285 FCFA (16.1%). Under the assumption that preference for income unobservability reflects the implicit tax rate people will face on their observable revenues, the observed WTP is really high. Moreover, as shown in Table 15 in the Appendix, men whose daily food consumption is above the median are willing to pay more than those below the median, either because they are less income constrained or because they face higher redistributive pressure. In contrast, women below and above the median have exactly the same WTP to hide, both at the mean and median. The distribution of the WTP to hide are shown in Figures 1, 2 and 3 in the Appendix for the individuals with a positive WTP to hide income[31].

Table 16 in the Appendix presents the estimation of the price elasticity for income privacy relying on a panel logit model with random individual effects. We find a demand for hidden income decreasing with price. Conditional on the reference 0 FCFA price, the larger the offered price, the lower the probability to hide. Furthermore, the willingness to hide income decreases more slowly with the price for men than for women. This is in line with the descriptive statistics of Table 1. This model estimating the sensitivity of the WTP to hide income to prices is robust to alternative specifications, such as a pooled panel logit model where panel robust standard errors are estimated by clustering them at the individual level[32].

5.2 The determinants of the WTP to hide income

Exploiting the experimental variations in the pool of observers of the gains

Table 2 presents the estimation results of the effect of the experimental variations of the group composition on the WTP to hide income. Panel A shows the estimation results of the interval-censored-data regression model of the determinants to the WTP to hide income. Panel B concerns the results of the logit estimation on the dummy variable, taking 1 whether the individual has a positive WTP and 0, otherwise. Column (1) is estimated on the whole sample, columns (1w) and (1m) on the respective subsamples of female and male players.

Looking at the interval-censored model, in Panel A of Table 2, coefficients represent the additional price people are willing to pay. We find that men are willing to pay in average 192 FCFA

[31]This means that a WTP equal to 0 on the histogram means that the individual prefers hidden income over public income when the choice is free, however she is not ready to pay a price at 200 FCFA or more.

[32]Results not shown, available upon request.

Table 2: The effects of the experimental group composition on the WTP to hide income
Interval-censored & Logit regressions

	All (1)	**Women** (1w)	**Men** (1m)
Panel A: Interval-censored estimation on the WTP to hide (in FCFA)[†]			
Male	192.4*		
	(105.4)		
Selected in household pair	−17.9	−122.4	110.1
	(110.7)	(120.5)	(211.0)
Any known non-kin in the session	−16.0	−94.3	89.5
	(150.2)	(131.2)	(335.4)
Any kin in the session (excl. household pairs)	271.1**	444.7***	−265.3
	(134.8)	(132.5)	(301.0)
Mean of the WTP to hide (in FCFA)	732.4	651.2	902.7
Number of observations	771	524	247
AIC	7512.7	4914.9	2592.5
Test Chi-2 p-value	0.00	0.00	0.00
Panel B: Logit estimation on the dummy, willing to hide (Yes/No)[‡]			
Male	0.024		
	(0.041)		
Selected in household pair	−0.006	−0.004	−0.054
	(0.040)	(0.045)	(0.070)
Any known non-kin in the session	0.027	−0.018	0.129[+]
	(0.042)	(0.058)	(0.081)
Any kin members among players- part. exclu.	0.107*	0.192***	−0.063
	(0.056)	(0.058)	(0.088)
Mean of the dummy, willing to hide	0.65	0.65	0.66
Number of observations	771	524	247
Test Chi-2 p-value	0.00	0.00	0.00

s.e. clustered at the session level in (); $^{+}p < 0.12$,$^{*}p < 0.10$,$^{**}p < 0.05$,$^{***}p < 0.01$.
Panel A: Interval-censored data regression model; [†] Dependant variable: maximum price p willing to pay to hide. It is observed in intervals for a price $p \leq 1000$ FCFA: $\{\ ]-\infty;0[\,;[0;200[\,;[200;500[\,;[500;700[\,;[700;1000[\}$. The exact price is observed for price above 1000 FCFA (specific question).
Panel B: Logit model (average marginal effects); [‡] Dependant variable : dummy equal to 1 if the WTP is positive
Controls not shown : literacy, ethnicity and religion

more than women for income privacy. Moreover, looking at columns (1w) and (1m), it appears clearly that men and women do not share the same determinants of their WTP to hide income. Women and men have generally separate social networks: they do not interact within the same groups and the pressure to redistribute may thus also come from differents groups[33]. Therefore, we focus hereafter in the discussion on these two specifications. A first remark is that the effect of being selected along with another household member is never significant neither for men or women.

For men, we find no significant effect of the experimental variations of the group composition of a lab session on the maximum price they are willing to pay (Panel A of Table 2). However, in Panel B, we find that at the extensive margin, men are more likely to be willing to hide when there is at least one known non-kin person in the same session: this increases their probability to hide by 13 percentage points (although the effect is only significant at 12%). This is suggestive that men are fearing more redistributive pressure from non-kin neighbors than from kin.

For women, the variable indicating that at least one kin attended the same session than the player (other than the player's potential paired household member) does significantly increase the WTP to hide income. Given our experimental design, a kin who attended the same session lives in the same the community but does not belong to the player's household. Hence, having at least one non-household-member kin attending the lab increases the WTP by 445 FCFA for women whereas having a household member participating to the session has no significant impact, though the sign is negative. In Panel B, we consider the extensive margin, we also find for women that the presence of at least one kin in the same session increases the probability to be willing to hide income by 19 percentage points.

Furthermore, Table 17 in the Appendix explores the heterogeneity of the effects between poorer and richer households by estimating the interval-censored data model on the samples below and above the median of household daily food expenditures per capita for all and for women[34]. We find that the effect of this variable, any kin in the same session, is the same for women below or above the median of household food consumption. This means that poorer and richer women do respond similarly to the presence of a non-household-member kin.

Other determinants

Tables 18 and 19 in the Appendix present the results for all the covariates of the interval-censored data model respectively on the whole sample and on the subsamples below and above the median of household food consumption. Results of the logit estimation for all covariates are presented in Table 20 in the Appendix; they are rather similar to the previous model and are not further discussed here.

[33]For an illustration in the context of Madagascar, see Nordman and Vaillant (2014).

[34]The smaller sample size for men do not allow us to look at the subsamples of men below and above the median of food consumption.

For women, the characteristics correlated with a higher WTP to hide income are closely linked to the position they hold in their extended family and their community (see Table 18, column (1w)). Besides the experimental variation variables we already commented, a woman who has always been living in the community is willing to pay 380 FCFA more. Having always lived in the community implies that she may have had longer interactions with members of the community and potentially extended family members. Concerning her economic situation, a woman's incomes are positively correlated with the WTP to hide. These two last effects are driven by the sample of women below the median of daily food expenditures (see column (1w) in Table 19). A possible interpretation is that women who earn labor revenues and who have always lived in the neighborhood are more at risk to be asked for transfers and this is more true for the ones living in the poorest households. In addition, women in poorer households who work in the formal sector, meaning that they have stable revenues, decrease their WTP by 485 FCFA. This implies that the result on earnings explained above is mainly driven by women working in the informal sector for which earnings are more instable and therefore hiding their income can be a strategy to smooth their own consumption. An alternative interpretation could be that if working in the formal or informal sector is a matter of choice, female formal workers may be women who fear less having more visible and stable income and thus being "taxed". Regarding the individual position in the household, being the household head or the spouse of the head increases the WTP by 433 FCFA for the former, by 273 FCFA for the latter. The only negative and significant variable in Table 18 is the share of dependent household members (the elderly and children): a woman living with her husband and her two children is willing to pay 395 FCFA less than a woman living only with her husband.

For men, the only similitude with women is that being the household head leads also to a higher WTP to hide income and the magnitude is quite similar: male heads are willing to pay 474 FCFA while, as mentioned above, female heads, 433 FCFA. Determinants of the WTP to hide income for men can be distinguished in two broad dimensions: on the one hand, characteristics related to the economic position, – a better economic position is correlated with a higher WTP and a worse-off position with a lower WTP –, and on the other hand, having a good social position in the community with a *lower* WTP. With respect to the social dimension, holding a responsibility in the community[35] induces a WTP lower by 1316 FCFA. Hence, a responsibility in the community may induce a higher internalized redistributive duty. Another potential explanation for this correlation is that men holding a responsibility may be very specific and have more control over their resources and therefore fear less possible taxation of their gains. Looking at proxies for economic status, we see that being single or being the child of the household head, i.e. having fewer people financially at charge, encourages men to increase their WTP to keep income private by 558 FCFA and 391 FCFA respectively. Also a higher daily food expenditure is linked with a higher WTP. Renting a house, often correlated with a weaker economic situation, is associated with a decrease of the WTP by 1220 FCFA: this suggests that poorer men are less ready to

[35] Among individuals that have a responsibility within the community, 21% are responsible of a "tontine" (ROSCAS), 35% are responsible of another type of association and 44% have another kind of responsibility.

forgo some money to keep income unobservable.

As a conclusion, we find that for both men and women, variables that seem correlated with a higher redistributive pressure are also determinants of a higher WTP to hide income. These variables differ however across gender. Thus, women with more and stronger family ties in the community are willing to hide more. Men who are better-off economically are willing to pay more to hide, and vice versa for men worse-off. However, men endowed with some observable high social status, such as responsibility in the community, are negatively correlated with the WTP to hide, potentially because these positions also allow them to gain more control over their resources.

6 The impact of hidden income on resource allocation decisions

This section presents the main results of the randomized-controlled-trial phase of our experimentation. We analyze the effect of the randomized hiding opportunity in the lab on resource allocation decisions made out of the lab. We consider the share of lottery gains devoted to several commodity types, as presented in the previous section. All subsequent tables of results will be organized in the same way. In Panel A, we show the results of model (4.1) estimating on the whole sample, the ITT effect of having drawn a "private card", namely a card giving the opportunity to hide income. In Panels B and C, we estimate the same model restricting it to the sub-sample of individuals with positive willingness to pay to hide, for Panel B and with non-positive willingness to pay to hide for Panel C. In Panel D, we estimate the interaction model (4.2) on the whole model: we investigate whether the effect of the opportunity to hide is statistically different between the two sub-samples with positive and non-positive WTP to hide. We thus interact the variable "private card" with a binary variable taking 1 if the WTP to hide is positive. In Panel E, we present the unconditional means at the reference value, namely for individuals with "public cards" and with public cards and a positive WTP to hide income.

6.1 Main results

Table 3 presents the results of the impact of income hiding on resource allocation choices for all participants[36].

A first observation points to the fact that transfers to kin account for the largest share of expenses of the lottery gains (Panel E): it represents 21% of the gains for people with public cards (i.e. 1980 FCFA out of 9000 FCFA). The share dedicated to the contribution to the household food expenditures is similar. Transfers to non kin are rather marginal in comparison. We find that public card winners with positive WTP to hide are spending 11 percentage points more of their gains on transfers to kin than individuals with also public cards but non-positive WTP to hide. Importantly, this result reinforces the relevance of our measure of the WTP to hide: individuals

[36]Table 22 in the Appendix shows the same results without any control, only community and session fixed effects.

Table 3: Effect of the opportunity to hide on allocation choices of the lottery gains
Sample: all individuals

Dependant var:	Expenditures				Transfers			
Commodity shares	Personal	Health	Hh non-food	Hh food	To kin	To non-kin	Investment	Saved gains
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A (N=654): Whole sample								
Card with opportunity to hide	3.966*	1.446	−1.389	−0.704	−2.655	0.386	−1.895	0.302
	(2.101)	(1.327)	(2.139)	(3.030)	(2.257)	(0.971)	(2.711)	(1.473)
R^2	0.09	0.04	0.06	0.11	0.10	0.05	0.10	0.03
Chi-2 (p-value)	0.00	0.70	0.03	0.00	0.00	0.11	0.00	0.54
Panel B (N=433): Sample with WTP to hide† ≥ 0								
Card with opportunity to hide	4.989*	2.727*	−3.394	1.766	−6.720**	1.456	−2.873	0.607
	(2.711)	(1.560)	(2.568)	(3.642)	(2.795)	(1.273)	(3.383)	(1.845)
R^2	0.10	0.06	0.07	0.16	0.11	0.06	0.12	0.05
Chi-2 (p-value)	0.00	0.24	0.20	0.00	0.00	0.26	0.00	0.72
Panel C (N=221): Sample with WTP to hide† < 0								
Card with opportunity to hide	1.965	0.074	−0.012	−5.033	4.531	−1.655	2.223	−0.692
	(3.396)	(2.523)	(3.936)	(5.462)	(3.934)	(1.475)	(4.572)	(2.482)
R^2	0.14	0.06	0.15	0.13	0.17	0.13	0.17	0.12
Chi-2 (p-value)	0.06	0.94	0.08	0.12	0.00	0.14	0.00	0.26
Panel D (N=654): Testing heterogeneity across WTP to hide†								
Card hide × WTP to hide ≥ 0‡	3.350	3.241	−4.829	4.917	−10.745**	2.797	−2.372	0.512
	(4.428)	(2.791)	(4.532)	(6.389)	(4.778)	(2.043)	(5.726)	(3.113)
R^2	0.10	0.04	0.06	0.11	0.10	0.05	0.10	0.03
Chi-2 (p-value)	0.00	0.71	0.04	0.00	0.00	0.11	0.00	0.65
Panel E: Unconditional means								
Public cards (N=164)	10.754	2.724	11.495	26.445	20.7	3.144	17.344	5.599
Public cards & WTP ≥ 0 (N=104)	10.989	1.784	12.042	24.047	24.713	2.556	17.361	5.599
Public cards & WTP <0 (N=60)	10.347	4.352	10.548	30.601	13.742	4.164	17.314	5.599

S.e. in (). $^{+}$ p ≤ 0.12, * p ≤ 0.1, ** p ≤ 0.05, *** p ≤ 0.01. Panels A, B, C & D: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment). The sample of strictly negative WTP to hide encompasses all individuals who prefer to get the gains in public rather than in private even at no cost; the sample with positive WTP is all the other inviduals.
‡ In Panel D, main effects are also included: WTP to hide and card with opportunity to hide lottery gains (both in dummies).
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Samples: in all panels, individuals who drew the card 1000 FCFA in public are excluded. Panel A and D: whole sample. Panel B (resp. C): sample with positive (resp. negative) WTP to hide income.
Control variables common in all colums in all panels: (d = dummy) sex (d), age, household head (d), link to household head, Wolof dummy, Muslim dummy, any Koranic & French education (d), being single (d), household size, share of dependents in household (below 15 or above 60), works in formal sector (d), average income over last 3 months if worked last 7 days (in log), household food expenditures per day per capita (in log).
Additional control variables in col. (1): contributes to household daily food consumption (dummy), col. (2): has a chronic disease or a handicap (d), receives and/or benefit from external support in/out the neighborhood (d). Col. (4): contributes to household daily food consumption, col. (5): eldest among same-parents siblings (d), selected with another household member (d), has any kin the lab session (excl. household pair) (d), col. (6): holds a responsibility in the community (d), col. (7) and (8): holds a formal or informal salaried job (d).
Community fixed effects included in all panels and for all outcomes.

with a positive WTP are also those more subject to informal taxation. Personal expenditures, investment and non-food household expenditures are accounting each for around one tenth of the gains.

6.1.1 Transfers

The central result of our paper is the effect of the opportunity to hide on transfers to kin: having the opportunity to hide decreases by 27% the share devoted to transfers to kin but only for individuals who have preference for income privacy. Indeed, no significant effect on transfers is found for the whole sample in Panel A while a large decrease of 6.7 percentage points of total gains dedicated to transfers to kin is found for individuals with a positive WTP to hide in Panel

B and a non significant increase, for individuals with a negative WTP to hide[37]. For Panel B, this represents a decrease of 603 FCFA out of the 2224 FCFA transferred on average to kin by the reference group who drew a public card and were willing to hide. Moreover, the effect of the opportunity to hide between the individuals with positive and non-positive WTP to hide is significantly different: the large difference of -10.7 percentage points is significant at 5% (Panel D).

An interesting question is whether this effect on transfers to kin concerns household members or kin outside the household. We explore this difference in Table 23 in the Appendix. We find that this effect is mainly driven by a decrease in transfers to kin outside the household for individuals with a positive WTP to hide income, although the coefficient for transfers within the household is also negative. Strikingly, the difference between individuals with a positive and non-positive WTP to hide comes mainly from the opposite reactions to the opportunity to hide for transfers to household members: in Panel B, the effect is negative, while in Panel C it is positive and the interaction term in Panel D is negative and significant. For transfers to kin outside the household, we find that individuals with no preference for hidding are also decreasing their transfers but to a non-significant lower extent.

We do not find any significant effect on transfers to non kin, if anything for the ones with a positive WTP to hide, the effect of being able to hide is of positive sign.

6.1.2 Personal expenditures and other outcomes

Almost symmetrically to the decrease in transfers, the share of the gains devoted to personal expenditures is significantly increased. This is found even for the whole sample, the effect being larger in Panel B than in Panel C, although the difference is not significant (Panel D). For Panel B, this effect is of 5 percentage points, accounting for an increase of 45% in the share (449 FCFA). We also find weak evidence of an effect of the opportunity to hide for the individuals willing to hide on health[38] that again seems totally driven by individuals with a positive WTP to hide income. Their health expenses are 1.5 times larger when they have the possibility to hide their lottery gains, than when they get everything in public.

In brief, the key result here is that allowing people exogenously to hide their gains decreases considerably the share dedicated to transfers to kin, especially kin outside the household, with more resources being spent on private expenditures and potentially to health. The result on transfers concerns exclusively subjects who show *ex ante* preferences towards income privacy.

[37]The sample of individuals with non-positive WTP to hide is rather small and we lack power for estimating significant effect on this sub-sample.

[38]The Chi-2 test has a p-value of 0.24 which is far from any standard level of significance. However, the share devoted to health is small – 1.8 % in the reference group– meaning that we may lack power to estimate properly this effect.

6.2 Heterogeneity between worse-off and better-off individuals

In this paper we aim at assessing the impact of providing the opportunity to hide on resource allocation choices and especially on transfer behaviors. A subsequent interesting dimension of this research question is whether this impact is different among worse-off and better-off individuals, in other words, whether more financially constrained individuals are making different choices in terms of transfers and allocation strategy than individuals in a more comfortable economic situation. For this, we explore the heterogeneity of the effect at the median of the household daily food consumption per capita level. The median of the household daily food consumption per capita level is 420 FCFA. The mean daily household food consumption per capita for the sample below the median is 301 FCFA while for the sample above, it is more than the doubled: 696 FCFA. Hence, for an individual in the lower part of the distribution, the lottery gains represent almost a month of his/her own daily consumption while for someone above the median, this only represent 13 days. We may thus expect differential effect of the lottery gains in private or in public on these two subsamples. We conduct this analysis in Table 24 in the Appendix on the whole sample. Panel A concerns the sample of individuals below and at the median of household daily food consumption while Panel B refers to the sample strictly above. Moreover, in Panels A2 and B2, we restrict the considered samples to the individuals with a positive WTP to hide.

The first important results of Table 24 is that the negative effect of the opportunity to hide on transfers to kin is found for the two samples above and below the median of household daily food consumption for individuals with a positive WTP to hide. We note that the effect is larger for the sample above the median. Moreover, we observe that the effect on the personal expenditures is mainly driven by better-off individuals the magnitude and the significance of the effect being larger on this sample. Therefore, the results found in the previous section seem to be driven by the sample of better-off individuals. This is also in line with the findings of Section 5: players in richer households have a higher WTP to hide than those living in poorer economic conditions, probably meaning that they face higher redistributive pressure. Finally, we find that the investment shared is decreased by the opportunity to hide among individuals willing to hide but this is only true for individuals below the median. It seems that investing in inputs is part of a strategy to keep more control over one's resources and to lessen the pressure to redistribute[39]; hence, getting the opportunity to hide make this strategy redundant.

6.3 Gender analysis

The analysis of the willingness-to-pay to hide income shows strong difference in the determinants to hide income across gender and along the median of household food expenditures. Following on these results, we explore the heterogeneity of the results by splitting our samples by gender – Table 25 for women and Table 5 for men – and by household economic position – Table 4 for

[39]Some qualitative evidence of such type of coping strategies is provided in (Boltz and Villar, 2013)

women[40].

6.3.1 Women

Looking at Table 25, we find no significant effect of the opportunity to hide neither on transfers to kin –although the sign is negative–, nor on personal expenditure –the sign being positive. Interestingly, we find a weak negative effect on the share devoted to investment purchases among women who were willing to pay to hide income: meaning that women who did not get the opportunity to hide but were willing to hide are spending 7.5 percentage points more on investment than women with similar preferences and got the "private card".

Table 4: Effect of the opportunity to hide on *transfers* and allocation choices of lottery gains
Sample: Women - below or above median food consumption

Dependant var:	Expenditures				**Transfers**				
Commodity shares	Personal	Health	Hh non-food	Hh food	**To hh**	**To kin out hh**	**To non-kin**	Investment	Saved gains
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: Sample below median of household daily food consumption									
Panel A1 (N=242): All									
Card with opportunity to hide	1.905	2.509	−2.571	2.090	0.069	−2.919*	1.970	−7.479*	2.399
	(3.246)	(2.157)	(3.223)	(4.787)	(3.078)	(1.581)	(1.624)	(4.216)	(2.514)
R^2	0.18	0.11	0.07	0.15	0.20	0.16	0.09	0.14	0.09
Chi-2 (p-value)	0.00	0.51	0.78	0.01	0.00	0.00	0.60	0.03	0.45
Panel A2 (N=156): WTP ≥ 0									
Card with opportunity to hide	5.065	2.992	−0.920	5.482	1.449	−4.522**	2.896	−13.421**	0.601
	(4.295)	(2.905)	(3.702)	(5.754)	(3.739)	(2.039)	(2.286)	(5.553)	(3.127)
R^2	0.18	0.16	0.12	0.25	0.29	0.21	0.14	0.19	0.09
Chi-2 (p-value)	0.06	0.44	0.68	0.00	0.00	0.03	0.37	0.03	0.90
Panel A3: Unconditional means									
Public cards (N=61)	12.566	1.73	11.02	25.384	15.146	4.521	1.906	21.539	3.689
Public cards & WTP >=0 (N=39)	12.65	1.567	10.142	20.855	15.883	5.271	1.496	24.587	4.558
Panel B: Sample above median of household daily food consumption									
Panel B1 (N=208): All									
Card with opportunity to hide	5.518+	−2.222	1.565	−2.028	−1.498	1.295	−1.299	−1.624	−0.593
	(3.377)	(2.286)	(3.878)	(4.914)	(3.334)	(1.890)	(1.675)	(5.536)	(2.127)
R^2	0.25	0.18	0.15	0.18	0.14	0.16	0.09	0.22	0.16
Chi-2 (p-value)	0.00	0.02	0.12	0.00	0.09	0.02	0.71	0.00	0.02
Panel B2 (N=137): WTP ≥ 0									
Card with opportunity to hide	7.158	0.874	−4.730	−1.817	−4.001	2.839	0.855	−4.573	3.965
	(4.783)	(1.985)	(4.640)	(6.441)	(3.970)	(2.578)	(2.019)	(7.004)	(2.763)
R^2	0.30	0.29	0.25	0.26	0.18	0.24	0.17	0.29	0.26
Chi-2 (p-value)	0.00	0.00	0.01	0.00	0.20	0.01	0.23	0.00	0.00
Panel B3: Unconditional means									
Public cards (N=52)	8.172	5.491	10.833	22.244	14.783	3.034	4.032	24.124	1.866
Public cards & WTP >=0 (N=30)	10.276	2.296	14.111	18.709	16.259	2.593	2.057	26.556	1.937

S.e. in (). $^{+}$ p ≤ 0.12, * p ≤ 0.1, ** p ≤ 0.05, *** p ≤ 0.01. Panels A, B, C & D: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
‡ In Panel D, main effects are also included: WTP to hide and card with opportunity to hide lottery gains.
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Samples: women. In all panels, individuals who drew the card 1000 FCFA in public are excluded. Panels A (resp. B) correspond to women below or equal (resp. strictly above) to the median of household daily food consumption. Panels A1 and B1: whole sample, A2 and B2 : sample with positive WTP to hide income, A3 and B3: unconditional means.
Control variables: same as in Table 3.
Community fixed effects included in all panels and for all outcomes.
The median of the daily household food expenditures per capita is 420 FCFA.

While we found almost no effect of the treatment for the whole sample for female players, we

[40]The smaller size of the sample of men does not allow to conduct this analysis on men.

understand from Table 4 that the behaviors seem really heterogeneous among women depending on the economic condition of the household. Indeed, all women below the median are decreasing their transfers to kin outside the household by 2.9 percentage points; this effect reaches 4.5 percentage points for women in this sample with a positive WTP to hide, representing a decrease of 86% of the share devoted to these transfers by the reference group. Concerning transfers to household members, the sign is positive and non significant.

Finally, women below the median are decreasing their expenses for investment, by - 7.5 percentage points for all women and by -13.4 percentage points for women with a positive WTP to hide, accounting for the latter for a decrease in the share of 54.6 %, i.e. 1208 FCFA less spent relative to the 2213 FCFA spent on average by the sample of women with same preferences but a public card. The combination of these two effects on transfers to kin outside the household and on investment released for these women about 1620 FCFA. A natural subsequent question is thus: where do these women reallocate this extra money? Although no significant effect is found, they seem to spend more on personal and health expenditure, on household transfers and food expenditures and on transfers to neighbors. From this analysis, we see that the women in lower economic conditions are the more responsive to the offered strategy to hide income: they seem to try to escape the pressure to redistribute from kin in the neighborhood so as to spend more for themselves and for their households.

6.3.2 Men

Men are found in Table 5 to decrease by 12 percentage points the amount devoted to transfers to kin in Panel B for men with a positive WTP to hide. This effect accounts for a 40% decrease in the share devoted to transfers to kin by men of this sample, i.e. 1100 FCFA spent less on transfers out of an average of 2745 FCFA among male public card winners with a positive WTP to hide income. This is close to the mean WTP to hide income among male with a positive WTP: 1284 FCFA (see Table 1). This decrease in transfers to kin is associated with an increase of 9 percentage points in the gains allocated to personal expenditures. Again, this effect is really substantial since it doubles the share of the reference group. We learn from Table 26 in the Appendix that this decrease in transfers is mainly occurring towards kin outside the household –transfers to household members seem to decrease also but the effect is smaller and non significant. Concerning transfers to kin, the opposite effect is found for men with a non-positive WTP to hide: they transfers much more when having the opportunity to hide, although Panel C should be taken with caution since the sample for men becomes really small (N=64).

6.4 Robustness checks

6.4.1 Exploiting the different prices of the WTP to hide

Table 27 in the Appendix presents the results looking at different levels of prices, 0, 200 and 700 FCFA– the prices that were on the cards in the lottery box. We see that the effect (in absolute

Table 5: Effect of the opportunity to hide on allocation choices of lottery gains
Sample: Men

Dependant var:	Expenditures				Transfers			
Commodity shares	Personal	Health	Hh non-food	Hh food	To kin	To non-kin	Investment	Saved gains
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A (N=204): Whole sample								
Card with opportunity to hide	6.605^{+}	2.210	−3.613	−0.794	−2.662	−0.095	0.304	−0.805
	(4.086)	(2.398)	(4.005)	(6.033)	(4.463)	(1.754)	(3.521)	(2.812)
R^2	0.16	0.07	0.18	0.17	0.19	0.12	0.15	0.13
Chi-2 (p-value)	0.01	0.98	0.01	0.00	0.00	0.21	0.00	0.00
Panel B (N=140): WTP to hide† ≥ 0								
Card with opportunity to hide	9.184*	2.450	−5.223	−0.744	−12.126**	0.451	3.370	−0.662
	(4.933)	(2.924)	(4.893)	(6.833)	(5.402)	(2.213)	(3.823)	(3.496)
R^2	0.17	0.09	0.18	0.22	0.24	0.18	0.23	0.17
Chi-2 (p-value)	0.00	0.49	0.00	0.00	0.00	0.12	0.00	0.23
Panel C (N=64): WTP to hide† < 0								
Card with opportunity to hide	6.337	2.929	−8.496	16.356	21.617***	−1.943	−8.210	−8.815*
	(7.969)	(4.575)	(7.730)	(12.431)	(8.127)	(2.793)	(7.432)	(4.664)
R^2	0.35	0.39	0.44	0.38	0.44	0.34	0.39	0.40
Chi-2 (p-value)	0.05	0.01	0.00	0.00	0.00	0.00	0.00	0.00
Panel D (N=204): Testing heterogeneity across WTP to hide†								
Card hide × WTP to hide $\geq 0^{\ddagger}$	4.063	−0.259	−2.583	−5.694	−27.449***	0.428	12.322*	1.750
	(8.700)	(5.234)	(8.654)	(12.875)	(9.523)	(3.742)	(7.484)	(6.064)
R^2	0.16	0.08	0.19	0.17	0.22	0.13	0.18	0.14
Chi-2 (p-value)	0.00	0.62	0.01	0.00	0.00	0.00	0.01	0.17
Panel E: Unconditional means								
Public cards (N=51)	11.218	1.089	12.738	31.997	22.694	3.721	5.413	4.357
Public cards & WTP >=0 (N=35)	9.749	1.587	12.385	32.18	30.529	4.166	1.429	4.444
Public cards & WTP <0 (N=16)	14.432	0	13.511	31.597	5.556	2.748	14.13	4.167

S.e. in (). $^{+}$ p ≤ 0.12, * p ≤ 0.1, ** p ≤ 0.05, *** p ≤ 0.01. Panels A, B, C & D: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
‡ In Panel D, main effects are also included: WTP to hide and card with opportunity to hide lottery gains.
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Samples: Men. In all panels, individuals who drew the card 1000 FCFA in public are excluded. Panel A and D: whole sample. Panel B (resp. C): sample with positive (resp. negative) WTP to hide income.
Control variables: same as in Table 3.
Community fixed effects included in all panels and for all outcomes.

value) of the opportunity to hide on transfers to kin is globally increasing between a WTP to hide at 0 and at 700 FCFA, although the coefficient decreases slightly between 0 and 200 FCFA. However, globally the different coefficients are not statistically different from each other. A similar pattern is observed on the personal expenditures. We therefore for the simplicity of the presentation of the results mainly focus on the dichotomy between negative and positive WTP to hide income which guarrantees also the largest samples.

Income effect

In the estimated models (4.1) and (4.2), we do not control for the windfall gains obtained in the lab. The reason is that the lottery gains take the following values $\{8300; 8800; 9000\}$ and some values, namely 8300 and 8700 are specific each to a unique card in the ballot box. Then, controlling for the exact level of income would not allow a satisfying identification of our parameter of interest. We thus relied on the assumption that the maximum 700 FCFA difference between the subjects who earned 8300 and those who earned 9000 FCFA is not large enough to

induce different patterns in the *shares* of expenditures. To test for this assumption and whether our results in Table 3 are not driven by this mechanism, we estimate the same equations on the subsample of individuals who randomly drew the card $C_{9000,NP}$ or $T_{free,NP}$. The idea being that all of these individuals earned 9000 FCFA but some were randomly awarded 8000 FCFA in private while others were not, all irrespective of their *ex ante* stated preferences. Hence, the comparison of these two groups is not affected by the issue raised above and the difference will capture only the effect of having hidden income. Table 28 presents the results. We find results very close to Table 3 both in sign and magnitude. We find that the opportunity to hide decreases by 6.2 percentage points significant at the 10% level the shares of the gains devoted to transfers to kin for individuals with a positive WTP to hide income in Panel B (the coefficient is -6.7 and significant at the 5% level in Table 3). In Panel D, the difference between the effect for individuals with a positive and with a non-positive WTP to hide is of -12.4 and significant at the 5 percent level while it is -10.75 with the same level of significance for the whole sample. Looking at the share of the gains dedicated to personal expenditures, we find a positive effect of 5.3 percentage points in Panel B , while in Table 3, it is 5 percentage points[41].

From these results, we can really conclude that our assumption that the resource allocation in terms of shares are not affected by the small differential in income gains among some participants, is valid.

The fungibility issue

We have considered so far only gains obtained in the lottery. One potential limit of our results is the question of the fungibility between the lottery gains and other income sources earned by the players. Lottery gains are not fungible in our context if an increase in the expenditures of an item using lottery gains is compensated by a decrease in the expenses for this item using the other income sources. In presence of such substitution in the use of the two types of earnings, our previous results would hide general equilibrium effects that would cancel out our estimated effects.

To discard this threat, we rely on the survey we conducted one week after, in which we asked for the labor income earned during the past 7 days, but also the amounts for the 5 largest transfers received and sent during this time frame[42]. We compute the total earnings perceived over the past seven days by summing the declared labor income, the received transfers and the lottery gains[43]. We thus compare our main results on the effect of hidden income on the share of lottery gains allocated to tranfers to kin and non-kin in Table 3, with the results on the share of total earnings on the same types of transfers[44] in Table 29 in Appendix. If the lottery gains are fully

[41]Other effects are found on household food and personal expenditures on Panel C, however we take these results with caution given the small sample size in this Panel (94).

[42]Note that these questions were asked at the beginning of the questionnaire with no reference to the lottery gains. The questions about the use of the lottery gains were asked only at the very end of the survey.

[43]For individuals who did not perceived their income in the last 7 days (e.g. monthly earned income), we compute it from the baseline survey.

[44]We only have the information about the amounts of the five most important transfers made during those

fungible, we should find close results between these two tables; in the opposite scenario, under non-fungibility of the gains, we should find no effect or an effect of the opposite sign, driven by the compensation mechanism highlighted above. Reassuringly, we find very comparable effects of the opportunity to hide: the opportunity to hide decreases the resources allocated to transfers to kin in both cases. The magnitude is even remarkably similar for players with a positive WTP to hide (Panel B): drawing the card allowing to hide income decreases the share allocated to transfers to kin by 6.7 percentage points in Table 3 and by 5.9 percentage points in Table 29. Results in transfers to non-kin are also close in magnitude but non-significant. Moreover the shares allocated to transfers (Panel C) are very similar between the two tables.

Hence, this test allows us to rule out the issue of the non-fungibility of the lottery gains, meaning that our main results were not assorted with opposite compensating behaviors with non-lab income.

Aversion for public attention: an alternative channel ?

Our argument here is that the willingness-to-pay to keep income private is driven by the fear of out of the lab claims over gains from kin or neighbors. However one may wonder whether an alternative or competing story might be an aversion for public attention: whether fear or distaste of being publicly exposed, irrespective of their income from the experiment, is revealed or not. We think that our experiment does not suffer from this competing story. Indeed, an important feature of our experiment is that everybody was publicly exposed in the lab and this was public information since the beginning of the session. Each participant was named and received in public at least 1000 FCFA even when some gains were received in private.

7 Intra-household decision-making channels

An additional dimension of our experiment is that we randomize the number of household members who participate in the same session. This feature enables us to identify the interactions within the household and their impact on resource allocation[45].

As described in the experimental design, in half of the households, a unique member is selected while in the other half, two members are. All households –irrespective of the number of selected members– satisfied the condition of having at least two eligible members, so as to ensure comparability between individuals selected alone and those selected in pairs. Participants were drawn randomly among all eligible members, without any further restriction such as being the household head or his spouse. Therefore, unsurprisingly in the context of Senegalese extended households, there is a large heterogeneity in the types of relationships shared in the selected pairs, as shown by Table 30 in the Appendix. Spouses represent only 15.9% of pairs, while

seven days and not for other types of expenditures. Since our main results focus on transfers, we think that this comparison provide a convincing test on the fungibility issue.

[45]This section is still exploratory. It will be the object of a separate paper and a theoretical model will be joined to disentangle the various potential mechanisms at play.

child-parent or siblings pairs account for respectively 18.9% and 24%.

For the remaining of the section, we investigate the strategic behaviors within and across pairs and their effects on the individual resource allocation choices, depending on the opportunity to hide and the preferences for hidden income of each one in the pair. We first describe the various channels for intra-household decision-making that are potentially at play; second, we test for them relying on our experimental design. In the subsequent section, we will refer to *paired* and *unpaired* individuals, for respectively individuals selected in household pairs and individuals selected alone in their household. Within a household pair, we refer to *player i* for the considered individual and to *paired player j*, the other household member with whom *player i* was selected. Moreover, for the sake of the ease of presentation, we consider *player i* as a woman and *player j* as a man.

7.1 Potential channels at play

The main objective is to understand the process of intra-household decision-making for resource allocation. We will thus rely on the experimental variations in both the level and the observability of the lottery gains and on the in-the-lab elicited preferences for hidden income. First, we discuss the main channels that potentially affect individual allocation choices.

Inequality-aversion effect *vs* **redistributive obligations** In presence of strong asymmetries in the gains within a pair and inequality aversion, the individual with the higher public gains, say player i, is more likely to do a transfer directly to low-gain player j. This aversion to inequality is understood here as a preference parameter and thus should not vary with the observability of the player's gains by others. An individual is intrinsically inequality averse if, even when she gets private income, she is prone to redistribute a higher share of her gains. However, we do not refer to inequality aversion when an individual redistributes more only if the inequality are fully publicly observable, meaning that the difference of the gains are observed by others. Such a behavior is in line with a non-cooperative strategic behavior under strong redistributive obligations. Our prediction is thus that player i is inequality averse if she spends a larger share on transfers directly to player j, or indirectly to the household members, when player i gets high gains while j gets only low gains, no matter the observability of i's gains. If this effect is stronger or only found when player i's gains are public, this will be suggestive of strong social obligations for redistribution.

Household income effect under perfect information about gains For a given level of personal income, player i may make different resource allocation choices of her income depending on the other household members' level of income. We abstract for the moment our discussion from the role of asymmetries of information and consider that all gains are publicly observed by all household players. Holding her personal income fixed, we expect player i to invest a lower share of her income in the household –i.e. transfers to household members or household expenditures– and to spend a larger share on her private expenditures, when player j got high

gains relative to low gains. This may depend on the household resource allocation rule. In a fully cooperative household and in presence of normal goods, the effect of an increase in the household income on the relative demand for such a good will induce a lower share allocated to this good. If both players behave strategically, they play a static non-cooperative game: if player j earns higher gains, player i may free ride by contributing less than the case when j earns low gains, relying on the expected higher contribution (in level) of player j. Hence, in both the fully cooperative and the non-cooperative cases, player i should contribute relatively less to the household when the other paire player j has high gains. However, if player i does decrease her contribution even more so when her own gains are hidden rather than public, this is suggestive of a strategy aimed at circumventing redistributive obligations.

Between-household redistributive obligations: the pair signaling effect Irrespective of the differential level in the household gains obtained in the lottery, two households, one with one player and one with a pair of players may not face the same redistributive obligations towards non-participant kin or non-kin in the community. The idea developed here is that having two members participating in the lottery rather than one is observable by non-participants. Therefore, a household with two players relative to single-player household is perceived as more likely to earn more from the lottery and may therefore also face more demands for redistribution. The paired household may spend a larger share of the household gains on transfers to individuals outside the household than the household with a single player, for a given household income level. Mechanically, this should decrease the share of resources spent in the household and for private purposes.

Within-household information-transmission effect Having someone in the household who knows about the lottery gains potentially increases the spread of the information about them to non-participants to the lab, especially other household members. Therefore, if the player is exposed to redistributive obligations, being selected in pair may lead her to increase the share of transfers, and especially transfers within the household since this is the notable difference with single-players. If the other household player j is maximizing household welfare, he would only share the information among the household members so as to maximize the share of the gains spent in the household and minimize the share spent out of the household. If player j is egoistic, he would not share the information about player i's gains at all, so as to try to capture personally the maximum rent from the other player; this would also be measured as an increase in transfers within the household. Under this effect, in both cases, we thus expect player i to allocate a larger share of her gains in transfers to household members or household expenses and no effect on the level of transfers outside the household and to private commodities.

7.2 Empirical tests

We rely on the experimental design of our data to explore the various mechanisms underlined above.

7.2.1 Effect of the partner's level of gains: inequality aversion vs household income effect

We consider only paired individuals and among them, we keep pairs in which the player i drew any card which yields between 8300 and 9000 FCFA[46] and her paired player j drew either of the two no-option public card – the card 9000 FCFA all in public or the card 1000 FCFA in public. Hence, conditional of getting personally around 9000 FCFA for player i, we test whether an exogenous *observable* variation in the amount gained by the *other paired player* j has any effect on the resource allocation of the considered individual i. Similarly to equation (4.1), we thus estimate the following equation for individual i paired with individual j for commodity g:

$$\begin{aligned} Y_{ijg} = \ & \alpha + \beta \, HighPublicGain_j \ + X'_{ig} \, \gamma + \mu_c + \mu_s + u_{ijg}, \\ \forall \{i,j\} : \ & i \in \{HighGain\} \ \ \& \ \ j \in \{LowPublicGain, HighPublicGain\} \end{aligned} \tag{7.1}$$

The coefficient β may capture two main effects: a pure inequality aversion effect and an household income effect. Indeed, when the partner gets a lower gain, if player i is averse to inequality, she may increase her transfers to player j directly or indirectly, through household expenditures, to the household. Simarly, if the other player j has a low gain, the share devoted to within household transfers by player i should increase. Therefore, this test does not allow us to disentangle between the two effects. Table 6 presents the results of the test. When the paired

Table 6: Testing the household income effect under perfect information
Samples: individuals whose paired player got 9000 FCFA or 1000 FCFA in public without choice

Dependant var:	Expenditures				Transfers				
Commodity shares	Personal (1)	Health (2)	Hh non-food (3)	Hh food (4)	Within hh (5)	To kin out hh (6)	To non-kin (7)	Investment (8)	Saved gains (9)
Panel A (N=138): All									
β	−2.300	0.435	4.667	−3.445	−6.833*	−2.218	0.293	4.350	1.614
	(4.029)	(1.775)	(3.781)	(5.753)	(3.778)	(1.481)	(1.346)	(5.361)	(2.499)
R^2	0.29	0.20	0.22	0.22	0.26	0.24	0.16	0.23	0.21
Chi-2 (p-value)	0.00	0.19	0.03	0.03	0.00	0.15	0.37	0.02	0.06
Panel B: Unconditional means									
Pair got 9000 FCFA (N=58)	17.615	2.41	7.955	28.647	17.256	4.169	2.271	15.5	4.178

S.e. in (). $^{+}$ p ≤ 0.12, * p ≤ 0.1, ** p ≤ 0.05, *** p ≤ 0.01. Panels A : System of linear equations estimated with a SUR model.
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Samples: individuals with a lottery gain ≥ 8300 FCFA and who are paired with a player who drew a no-option public card 1000F or 9000 F.
Control variables common in all colums in all panels: sex, age, household head, link to household head, religion, ethnicity, Koranic & French education, marital status, household size and composition, sector of activity, average income over last 3 months if works (in log), contributes to hh food expenditures, household food expenditures per day per capita (in log).
Additional control variables in col. (1): contributes to household daily food consumption (dummy), col. (2): at least one household member has a chronic disease or an handicap (dummy), col. (5): contributes to household daily food consumption, is the eldest among same-parents siblings, was selected with another household member, has any kin the lab session (excl. household pair), col. (6): holds a responsibility in the community, col. (7) and (8): holds a formal or informal salaried job.
Community fixed effects included for all outcomes.

player j gets the high public gains rather than the low public gains, player i reduces the transfers to household members made by an individual by 6.8 percentage points, accounting for a 39%

[46] We are not able to restrict our sample on players i who only got 9000 FCFA in public because the resulting sample size would be too small to draw any conclusion.

decrease in the share. For the other outcomes, though not significant, the coefficient of the food household expenditures is rather large and negative as well while the investment share and the saved gains are positive. Hence, higher gains for the other player j causes a decrease in share of the gains player i devotes to the transfers to the household and subsequently releases resources that seem allocated to assets with more private returns (investment and savings).

Therefore, this result gives credence to the two potential mechanisms. Under the household income effect, player i adjusts negatively her contribution to the household when the paired player j gets higher gains.This is is also in line with the inequality-aversion effect. Indeed, if this effect on transfers to household members is actually driven by transfers to the less lucky player j, our effect could be explained by the inequality aversion effect.

The aversion to inequality is a preference parameter that should not vary with the observability of the revenue, while the household effect is likely to be strengthened under unobservable gains if driven by strategic behavior. Therefore a way to disentangle the two effects is to test whether the response of player i to high gains of player j varies depending whether player i got the opportunity to hide or not. However, the sample size are really small when we restrict to subsamples of players i with high public or high private cards and do not allow us to properly conduct this further test.

7.2.2 Effect of being in pair: the within-household information-transmission effect *vs* the household-signaling effect

We investigate here the mere effect of being in pair, abstracting for any income effect, on the resource allocation choices. Apart from the income effect, two channels described above can explain any difference in the resource allocation choices between an individual selected alone and an individual selected in pair: the within-household information transmission effect and the between-household pair signaling effect. In the first channel, we predict that having another household member co-selected for the lottery makes other household members more likely to learn one's own lottery gains and thus may push player i to increase the share of resources devoted to transfers or expenses for the household. In the alternative channel, being selected in pair makes non selected individuals of the community believe of higher potential gains in the lottery of this household and may drive more demands for transfers to the high-gain winner in the pair rather than to the high-gain winner selected alone.

We test for this by comparing individuals not selected in pairs with individuals selected in pairs whose paired player j got the no-option card 1000 FCFA in public. We therefore make the assumption that the only difference between the two groups is the fact in one group, individuals have another household member who knows part or all of their gains while in the other group they do not. By restricting our sample to the pairs with player j with low gains, we aim here to ensure that our analysis does not suffer from the household income effect[47]. We estimate the

[47]Arguably, the two groups, in pair and not in pair, differ also in that the paired player did get 1000 FCFA.

following equation for individual i paired with individual j for commodity g on the sample of unpaired individuals and paired individuals whose pair player got only 1000 FCFA in public:

$$Y_{ig} = \alpha + \beta\, InPair_i \; + X'_{ig}\,\gamma + \mu_c + \mu_s + u_{ig} \tag{7.2}$$
$$\forall i \; \in \{HighGain_i \;\&\; no\, pair, HighGain_i \;\&\; in\, pair\, with\, LowPublicGain_j\}$$

Table 7: Testing the effect of being in pair: comparing paired and unpaired individuals without the household income effect
Samples: unpaired and paired individuals whose paired player got only 1000 FCFA

Dependant var:	Expenditures				Transfers				
Commodity shares	Personal (1)	Health (2)	Hh non-food (3)	Hh food (4)	Within hh (5)	To kin out hh (6)	To non-kin (7)	Investment (8)	Saved gains (9)
Panel A (N=317): All									
β	5.647*	1.723	−2.628	0.736	−2.410	2.568**	−0.207	−0.160	−2.426
	(3.380)	(1.907)	(3.352)	(4.972)	(3.453)	(1.167)	(1.806)	(4.277)	(2.473)
R^2	0.13	0.09	0.10	0.16	0.20	0.14	0.06	0.15	0.05
Chi-2 (p-value)	0.00	0.44	0.10	0.00	0.00	0.01	0.67	0.00	0.90
Panel B: Unconditional means									
Unpaired (N=272)	10.877	2.921	10.031	28.482	15.838	1.87	3.901	15.54	6.482

S.e. in (). $^{+}$ p ≤ 0.12, * p ≤ 0.1, ** p ≤ 0.05, *** p ≤ 0.01. Panels A: System of linear equations estimated with a SUR model.
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Sample: individuals who drew the card 1000 FCFA in public are excluded. We further restrict to unpaired individuals and to paired individuals whose paired player got the no-option card 1000 FCFA in public.
Control variables common in all colums in all panels: sex, age, household head, link to household head, religion, ethnicity, Koranic & French education, marital status, household size and composition, sector of activity, average income over last 3 months if works (in log), contributes to hh food expenditures, household food expenditures per day per capita (in log).
Additional control variables in col. (1): contributes to household daily food consumption (dummy), col. (2): at least one household member has a chronic disease or an handicap (dummy),col. (5): contributes to household daily food consumption, is the eldest among same-parents siblings, was selected with another household member, has any kin the lab session (excl. household pair), col. (6): holds a responsibility in the community, col. (7) and (8): holds a formal or informal salaried job.
Community fixed effects included for all outcomes.

Table 7 presents the results. We find that being in a household pair rather than being selected alone *increases* the transfers to kin only *out of the household* by 2.6 percentage points for the whole considered sample. A first observation is that the fact that we do not find a positive and significant effect on within househol tranfers discards the household income effect that could be due to the 1000F difference in the household income between paired and unpaired individual. Indeed, as shown above, had we find a positive effect on the transfers within the household, we would not have been able to disentangle the effects between household income and within information transmission effect. However, here the results are neat since the effect on within-household transfers is non significant and negative. Second, the findings give credence to the between-household signaling effect of the pair, since we find a positive effect on transfers to kin out of the household (and not within). This means that irrespective of the actual household income effect, the signal given by having two household participants is sufficient to increase the share devoted by the high-gain winner of the pair to transfers to kin in the community, suggestive of a higher redistributive pressure from kin in the neighborhood.

However, given the results for this test and the above results on the household income effect, we show that the fact that the paired player got 1000 FCFA rather than 0 FCFA cannot explain our results. We will discuss further this point.

To conclude, we explored various potential channels that could affect the individual decision-making process for resource allocation. We find evidence of a decrease in transfers within the household when the paired player has in fact higher gains, in line both with a pure household income effect or with aversion to inequality. Moreover, we find that being selected in household pair increases the redistributive obligations towards kin in the neighborhood, through a pure signalling effect

8 Conclusion

We rely in this paper on an original experiment conducted in dense urban areas in Senegal that combines both a lab-in-the-field with a randomized controlled trial. We estimate in the lab the willingness-to-pay to hide income and analyze out-of-the-lab how the effect of having hidden income affects the choices of resource allocation. We first find a high willingness-to-pay for hiding: 65% of subjects prefer to receive their gains in private rather than in public and among them, they are ready to forego on average 14.3% of their unobserved income. We find that for both men and women, variables that seem correlated with a higher redistributive pressure are also determinants of a higher willingness-to-pay to hide income, although these determinants differ across gender. Second, looking at the effect of hidden income on out-of-the-lab allocation choices, individuals with preferences for hidden income are found to spend 23% of their windfall income on transfers to kin, when receiving the gains in public. Players that are willing to hide their income and could hide the lottery gains transfer 27% less and reallocate this extra money mostly in private expenditures and some weak evidence of reallocation in health expenditure is also found. Women in poor households invest a lower share of their income when they are able and willing to hide, suggestive of investment being a strategy to gain more control over her resources and to transfer less. These two components of the experiment corroborate the idea that the preference for hidden income is driven by a strategy to escape redistributive pressure. We further randomize within each household the number of participants (one or two), allowing us to study the channels of decision making within the household. We find evidence of a decrease in transfers within the household when the paired player has in fact higher gains, in line with a pure household income effect, an aversion to inequality or a strategy to reduce redistributive pressure. Furthermore, being selected in pair instead of being selected alone increases the share devoted to non-kin tranfers though higher demands for transfers, controlling for the household income effect.

This paper contributes to the growing but still scarce literature on the potential adverse effects of informal redistribution in developing economies. Our paper is the first to both identify the willingness to pay to hide revenues from peers and link it to the effect of redistributive obligations on resources allocation within and between households. We find that redistribution takes place mostly within the kinship networks and especially within the household. Importantly, allowing to keep revenues unobservable pushes allocation choices away from transfers towards personal and health expenditures. Interestingly, it also decreases the share devoted to the purchase

of productive assets for women in poor household, suggestive of investment representing an alternative strategy to income hiding for these women to gain more control over their resources and decrease potential demands for redistribution. The strong willingness-to-pay for income privacy and the considerable impacts on resource allocation it induces point the importance of designing adequate financial products such as savings, especially when they guarantee secrecy from other household or kin members and would offer more control over resources to individuals. However, further research is necessary to capture the general equilibrium effects, including the benefits of social redistribution in terms of risk-sharing as well as the distortionary costs as identified here. Future work will also involve exploring the various mechanisms at play in the individual decision-making process for resource allocation and redistribution decisions.

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9 Appendix A: Protocole

Table 8: Elicitation of preference for income unobservability: "option cards"

		Option A		**Option B**		Total
	p	Public	Private	Public	Private	
Choice 1	0	9000	0	1000	8000	9000
Choice 2	200	9000	0	1000	7800	8800
Choice 3	500	9000	0	1000	7500	8500
Choice 4	700	9000	0	1000	7300	8300
Choice 5	1000	9000	0	1000	7000	8000

Table 9: Cards in the ballot box and their associated pay-offs

Type of cards	Cards	Option	Public gain	Private gain	Total
Option cards	$Private_{p200,O}$	A: Public	9000	0	9000
		B: Private	1000	7800	8800
	$Private_{p700,O}$	A: Public	9000	0	9000
		B: Private	1000	7300	8300
No-option cards	$Private_{free,NO}$	-	1000	8000	9000
	$LowPublic_{NO}$	-	1000	0	1000
	$HighPublic_{NO}$	-	9000	0	9000

All gains are given in FCFA. 1000 FCFA ≈ 1.5 EUR.
"O" stands for option card (i.e. based on the choices made *ex ante*) and "NO" for no-option card (i.e. not based on the choices made *ex ante*).
A *Private* card gives the opportunity to hide, either based on the previously chosen option, at a price $p200$ or $p700$ (resp. 200 & 700 FCFA) or at no cost, $free$, and independently of the previous choices. A *Public* card gives all the gains in public.
Low refers to the small gains, 1000 FCFA. $High$ refers to the high gains, 9000 FCFA. All *Private* cards are high gains.

10 Appendix B: Descriptive Statistics

Table 10: Distribution of cards in the lottery

	Public cards		**Private cards**			Total
	$LowPublic_{NO}$	$HighPublic_{NO}$	$Private_{free,NO}$	$Private_{p200,O}$	$Private_{p700,O}$	
Option cards (O)	No	No	No	Yes	Yes	
Draws from lotery:						
Frequency	106	166	155	186	184	797
Percentage	13.3%	20.8%	19.5 %	23.3%	23.1%	100%

NO stands for "no-option", *O* for "option" cards.

Table 11: Distribution of gains for option cards

Card	Price	*Choice made at given price* Option A (All public)	Option B (Partly private)	Total
$Private_{p200,O}$	200 FCFA			
Frequency		80	106	186
Percentage*		43.0%	57.0%	100%
$Private_{p700,O}$	700 FCFA			
Frequency		93	91	184
Percentage*		50.5%	49.5%	100%

* It corresponds to the % of having chosen option A (resp. B) for a given card and at the corresponding price level. The difference between the take-ups for price = 200 and p=700 is not significantly different from zero at the 5% level.

NP stands for "not preference based", *P* for "preference based".

Figure 1: Distribution of the WTP to hide for people for all positive prices
Sample: all individuals

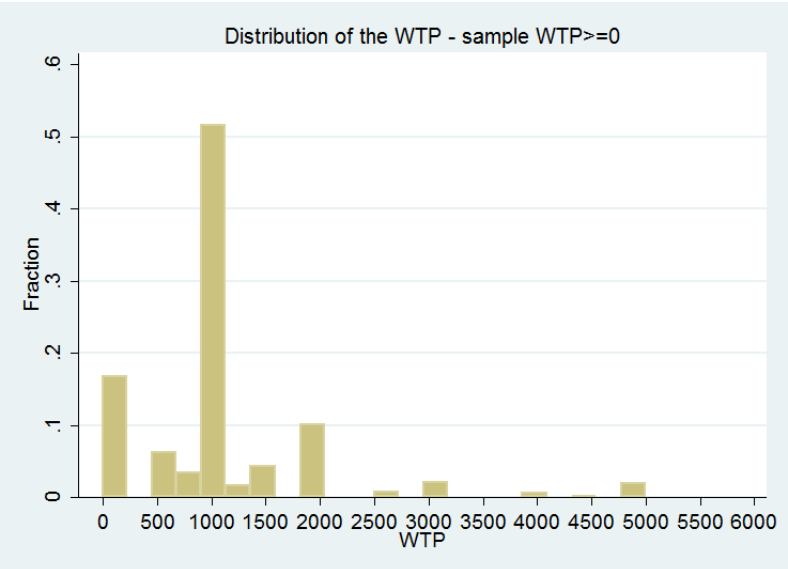

Figure 2: Distribution of the WTP to hide for people for all positive prices
Sample: women

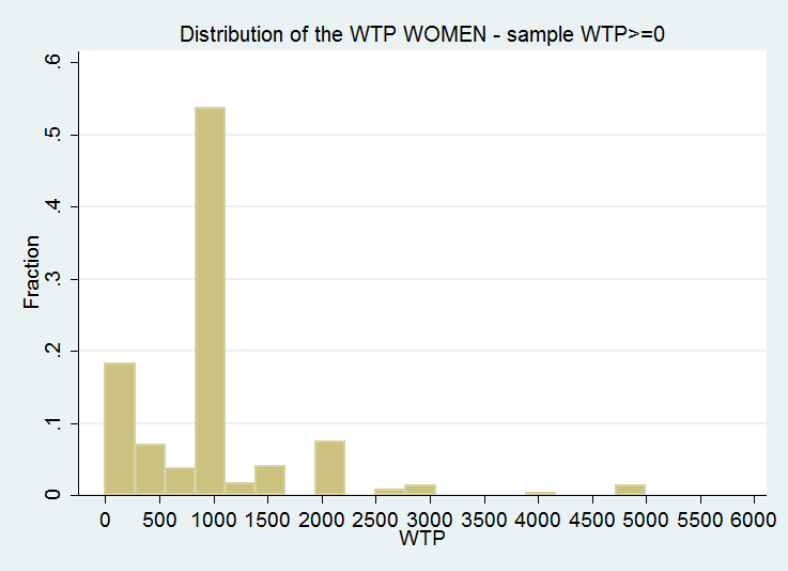

Figure 3: Distribution of the WTP to hide for people for all positive prices
Sample: men

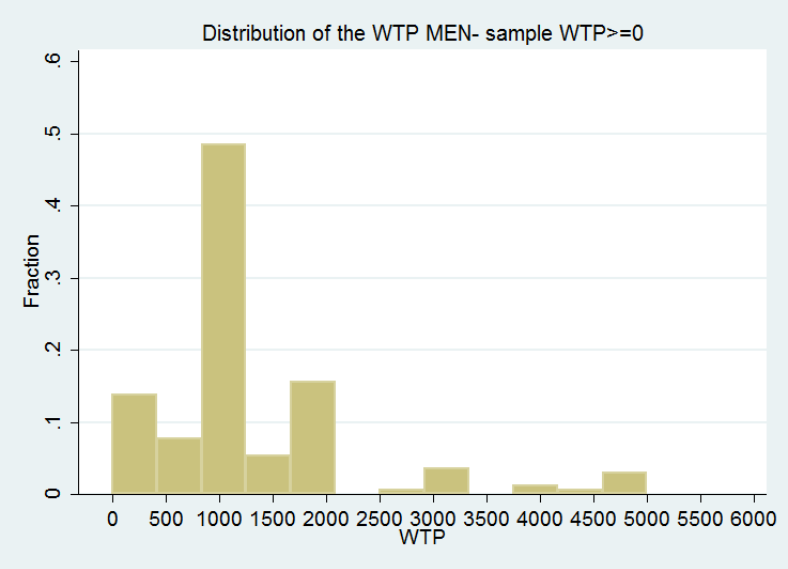

Table 12: Lottery sample and balancedness across *Private* and *Public* lottery cards

	Full sample		Private card		Public card		Diff.
	N	Mean	N	Mean	N	Mean	P-val.
	(0)		(1)		(2)		(1)-(2)
Experimental variations							
Selected with another household member	816	0,65	537	0,67	278	0,63	0,29
Any close friend among players	811	0,08	533	0,07	278	0,09	0,31
Any neighbor among players	811	0,79	533	0,79	278	0,79	0,87
Any kin members among players	811	0,53	533	0,55	278	0,49	0,15
Individual socio-demographic characteristics							
Male	816	0,33	537	0,32	278	0,34	0,57
Age	816	37,40	537	37,72	278	36,74	0,25
Muslim	816	0,96	537	0,97	278	0,94	0,10
Wolof	816	0,46	537	0,48	278	0,41	0,06
No education	816	0,23	537	0,23	278	0,21	0,51
Koranic School	816	0,36	537	0,36	278	0,36	0,92
French/Arabic education	816	0,61	537	0,59	278	0,65	0,13
In a monogamous union	816	0,48	537	0,44	278	0,56	0,00
In a polygamous union	816	0,18	537	0,18	278	0,17	0,50
Single	816	0,23	537	0,26	278	0,19	0,05
Other marital status	816	0,10	537	0,12	278	0,07	0,02
Individual economic characteristics							
Informal sector	816	0,86	537	0,85	278	0,87	0,45
Monthly earnings (in log)	810	6,59	531	6,53	278	6,70	0,67
Contributes to household's food exp.	811	0,42	534	0,43	276	0,38	0,20
Borrower	816	0,41	537	0,42	278	0,38	0,35
Lender	814	0,37	536	0,37	277	0,38	0,71
Owns some cattle	816	0,10	537	0,10	278	0,10	1,00
Owns some poultry	816	0,06	537	0,07	278	0,05	0,13
Personal exp. only funded by labor/capital earnings	803	0,30	528	0,30	274	0,29	0,67
Personal exp. only funded by private transfers	803	0,21	528	0,22	274	0,19	0,32
Personal exp. funded by savings	803	0,12	528	0,12	274	0,13	0,61
Personal exp. funded by loans	803	0,07	528	0,08	274	0,07	0,89
Individual position in the household							
Household head	815	0,20	536	0,21	278	0,17	0,19
Spouse of head	815	0,25	536	0,25	278	0,26	0,78
Son or daughter of head	815	0,28	536	0,28	278	0,29	0,90
Sibling of head	815	0,06	536	0,06	278	0,07	0,55
Eldest in same parent sibship	816	0,25	537	0,26	278	0,24	0,66
Father alive	816	0,43	537	0,43	278	0,44	0,81
Mother alive	813	0,72	535	0,70	277	0,75	0,13
Individual position in the community and extended family							
Has always lived in the community	816	0,35	537	0,37	278	0,32	0,22
Has a resp. in the community	816	0,09	537	0,10	278	0,07	0,09
Can rely on someone in household	816	0,65	537	0,64	278	0,67	0,31
Can rely on someone in neighborhood	816	0,15	537	0,15	278	0,14	0,96
Can rely on someone outside neighborhood	816	0,49	537	0,47	278	0,51	0,31
Anyone in household can rely on him/her	816	0,63	537	0,64	278	0,61	0,39
Anyone in neighborhood can rely on him/her	816	0,22	537	0,21	278	0,23	0,44
Anyone outside neighborhood can rely on him/her	816	0,34	537	0,35	278	0,34	0,81
Household characteristics							
Household size	815	11,75	537	11,88	277	11,54	0,47
Share of adult household members	815	0,63	537	0,63	277	0,63	0,96
Share of female household members	815	0,52	537	0,51	277	0,53	0,12
Household daily food consumption p.c. (log)	812	6,09	536	6,09	275	6,11	0,57
House is rented	816	0,33	537	0,35	278	0,29	0,13

Table 13: Attrition between baseline and lab surveys

Samples	Baseline		Lab		Attrited		Diff.
	N	Mean	N	Mean	N	Mean	P-values
	(1a)	(1b)	(2a)	(2b)	(3a)	(3b)	(2) - (3)
Experimental variations							
Selected with another household member	922	0.64	816	0.65	106	0.55	0.03
Individual socio-demographic characteristics							
Male	922	0.35	816	0.33	106	0.48	0.00
Age	932	37.07	826	37.44	106	34.15	0.01
Muslim	922	0.96	816	0.96	106	0.95	0.79
Wolof	922	0.46	816	0.46	106	0.48	0.66
No education	922	0.22	816	0.23	106	0.17	0.19
Koranic School	947	0.36	841	0.35	106	0.42	0.20
French/Arabic education	947	0.60	841	0.59	106	0.68	0.09
In a monogamous union	922	0.48	816	0.48	106	0.49	0.86
In a polygamous union	922	0.17	816	0.18	106	0.08	0.02
Single	922	0.25	816	0.23	106	0.38	0.00
Other marital status	947	0.09	841	0.10	106	0.05	0.09
Individual economic characteristics							
Informal sector	947	0.82	841	0.83	106	0.74	0.01
Monthly revenues (in log)	915	6.58	810	6.59	105	6.45	0.80
Contributes to household's food exp.	924	0.41	821	0.42	103	0.37	0.34
Borrower	921	0.39	816	0.41	105	0.30	0.03
Lender	919	0.38	814	0.37	105	0.40	0.62
Owns some cattle	922	0.11	816	0.10	106	0.18	0.02
Owns some poultry	922	0.07	816	0.06	106	0.11	0.07
Personal exp. only funded by labor/capital earnings	907	0.32	803	0.30	104	0.46	0.00
Personal exp. only funded by private transfers	907	0.21	803	0.21	104	0.25	0.34
Personal exp. funded by savings	907	0.12	803	0.12	104	0.10	0.49
Personal exp. funded by loans	907	0.07	803	0.07	104	0.06	0.53
Individual position in the household							
Eldest in same parent sibship	922	0.25	816	0.25	106	0.23	0.54
Household head	921	0.19	815	0.20	106	0.18	0.70
Spouse of Household head	921	0.24	815	0.25	106	0.20	0.25
Son or daughter of Household head	921	0.29	815	0.28	106	0.33	0.33
Sibling of Household head	921	0.06	815	0.06	106	0.06	0.85
Father alive	922	0.44	816	0.43	106	0.51	0.12
Mother alive	919	0.72	813	0.72	106	0.76	0.32
Individual position in the community and extended family							
Has always lived in the community	922	0.35	816	0.35	106	0.32	0.51
Has a resp. in the community	922	0.09	816	0.09	106	0.06	0.23
Can rely on someone in household	922	0.63	816	0.65	106	0.51	0.01
Can rely on someone in neighborhood	922	0.15	816	0.15	106	0.14	0.91
Can rely on someone out of neighborhood	922	0.48	816	0.49	106	0.44	0.42
Anyone in household can rely on him/her	922	0.63	816	0.63	106	0.66	0.51
Anyone in neighborhood can rely on him/her	922	0.22	816	0.22	106	0.25	0.36
Anyone outside neighborhood can rely on him/her	922	0.35	816	0.34	106	0.44	0.04
Household characteristics							
Household size	930	11.49	825	11.73	105	9.60	0.00
Share of adult household members	929	0.63	825	0.63	104	0.68	0.01
Share of female household members	929	0.52	825	0.52	104	0.50	0.31
Household daily food consumption p.c. (log)	926	6.12	822	6.10	104	6.28	0.00
House is rented	947	0.32	841	0.32	106	0.29	0.50

Table 14: Attrition between lab and post-lab surveys

Samples	Lab N (1a)	Lab Mean (1b)	Post-lab N (2a)	Post-lab Mean (2b)	Attrited N (3a)	Attrited Mean (3b)	Diff. P-values (2) - (3)
Experimental dimensions							
Positive WTP to hide	797	0.65	772	0.66	25	0.52	0.16
$Private_{O,A}$	797	0.22	772	0.22	25	0.08	0.09
$Private_{O,B}$	797	0.25	772	0.24	25	0.32	0.39
$Private_{free,NO}$	797	0.19	772	0.20	25	0.16	0.66
$HighPublic_{NO}$	797	0.21	772	0.21	25	0.16	0.55
$LowPublic_{NO}$	797	0.13	772	0.13	25	0.28	0.03
Selected with another household member	797	0.65	772	0.66	25	0.52	0.15
Any close friend among players	793	0.08	768	0.08	25	0.08	0.97
Any neighbor among players	793	0.79	768	0.79	25	0.76	0.69
Any kin members among players	793	0.53	768	0.53	25	0.52	0.93
Individual socio-demographic characteristics							
Male	797	0.32	772	0.32	25	0.56	0.01
Age	797	37.42	772	37.27	25	42.20	0.03
Muslim	797	0.96	772	0.96	25	0.96	1.00
Wolof	797	0.46	772	0.46	25	0.48	0.82
No education	797	0.23	772	0.23	25	0.16	0.42
Koranic School	797	0.36	772	0.35	25	0.52	0.09
French/Arabic education	797	0.61	772	0.61	25	0.68	0.47
In a monogamous union	797	0.48	772	0.48	25	0.48	0.98
In a polygamous union	797	0.18	772	0.18	25	0.24	0.45
Single	797	0.23	772	0.24	25	0.20	0.68
Other marital status	797	0.10	772	0.10	25	0.08	0.73
Individual economic characteristics							
Informal sector	797	0.86	772	0.86	25	0.84	0.78
Monthly revenues (in log)	791	6.57	767	6.54	24	7.59	0.35
Contributes to household's food exp.	792	0.42	767	0.41	25	0.56	0.14
Borrower	797	0.41	772	0.41	25	0.24	0.09
Lender	795	0.37	770	0.37	25	0.40	0.78
Owns some cattle	797	0.10	772	0.10	25	0.20	0.10
Expenses only funded by labor/capital	785	0.30	761	0.30	24	0.38	0.40
Expenses only funded by private transfers	785	0.21	761	0.21	24	0.13	0.30
Expenses only by savings	785	0.12	761	0.12	24	0.13	0.94
Expenses only by loans	785	0.07	761	0.07	24	0.13	0.33
Individual position in the household							
Household head	796	0.19	771	0.19	25	0.28	0.25
Spouse of head	796	0.25	771	0.25	25	0.24	0.90
Son or daughter of head	796	0.29	771	0.29	25	0.24	0.58
Sibling of head	796	0.06	771	0.06	25	0.08	0.61
Eldest in same-parent sibship	797	0.25	772	0.25	25	0.24	0.89
Father alive	797	0.43	772	0.43	25	0.44	0.92
Individual position in the community and extended family							
Has always lived in the community	797	0.35	772	0.35	25	0.32	0.77
Has a resp. in the community	797	0.09	772	0.09	25	0.12	0.58
Can rely on someone in household	797	0.65	772	0.66	25	0.52	0.16
Can rely on someone in neighborhood	797	0.14	772	0.14	25	0.20	0.42
Can rely on someone outside neighborhood	797	0.49	772	0.49	25	0.40	0.37
Anyone in household can count on him/her	797	0.63	772	0.63	25	0.76	0.18
Anyone in neighborhood can rely on him/her	797	0.22	772	0.21	25	0.28	0.43
Anyone outside neighborhood can rely on him/her	797	0.34	772	0.34	25	0.36	0.82
Household characteristics							
Household size	796	11.78	771	11.79	25	11.52	0.84
Share of adult household members	796	0.63	771	0.63	25	0.64	0.66
Share of female household members	796	0.52	771	0.52	25	0.48	0.17
Household daily food consumption p.c. (log)	793	6.09	769	6.09	24	6.12	0.79
House is rented	797	0.33	772	0.33	25	0.44	0.23

11 Appendix C: Results on the willingness-to-pay to hide

Table 15: The Willingness-To-Pay (WTP) to hide income
Samples: below/above the median of household daily food consumption

	Whole sample			**Sample with WTP $\geq$ 0**		
	All players	Women	Men	All players	Women	Men
Panel A: < median of household food expenditures						
Number of observations	400	272	129	259	177	82
Mean (in FCFA)	689	650	764	1063	999	1202
Median (in FCFA)	500	500	1000	1000	1000	1000
Std. Dev.	938	954	900	980	1025	864
Panel B: $\geq$ median of household food expenditures						
Number of observations	402	271	130	266	176	90
Mean (in FCFA)	776	652	1040	1173	1005	1502
Median (in FCFA)	700	500	1000	1000	1000	1000
Std. Dev.	1067	750	1502	1121	716	1602

1000 FCFA = 1.52 EUR = 1.71 USD
The median of the daily household food expenditures per capita is 420 FCFA.
Taking a conservative approach, the willingness-to-pay statistics are computed at the lower bound of the price interval. For example if a participant is ready to pay 200 FCFA but not 500 FCFA, her maximum WTP is registered as being equal to 200 FCFA.

Table 16: Willingness to hide income – Random-effect panel logit model

	All (1)	**Women** (1w)	**Men** (1m)
Price = 200 FCFA	-3.15^{***}	-3.24^{***}	-2.40^{***}
	(0.44)	(0.52)	(0.74)
Price = 500 FCFA	-5.78^{***}	-5.66^{***}	-5.22^{***}
	(0.53)	(0.62)	(0.88)
Price = 700 FCFA	-8.10^{***}	-7.97^{***}	-7.24^{***}
	(0.60)	(0.71)	(0.93)
Price = 1000 FCFA	-9.35^{***}	-9.26^{***}	-8.17^{***}
	(0.63)	(0.76)	(0.95)
Number of observations	3855	2620	1235

Panel logit with random effect model; Community and time fixed effects incl..; robust s.e. in (); $^{*}p < 0.10,^{**}p < 0.05,^{***}p < 0.01$.
Dependant variable: $Hide_{ik} = 1$ if subject i wants to hide at price $p = k$.
Controls not shown: same controls as in Table 18.

Table 17: The effects of the experimental group composition on the WTP to hide income
Interval-censored regression - Below/above the median of household daily food expenditures

	Below Median		**Above Median**	
Maximum WTP to hide†	All (1)	Women (1w)	All (2)	Women (2w)
Selected in a household pair	152.8	32.5	−131.7	−179.0
	(151.8)	(162.5)	(138.7)	(152.6)
Any known non-kin in the session	−15.0	19.1	6.5	−98.6
	(155.5)	(128.2)	(259.8)	(195.9)
Any kin in the session (excl. household pairs)	283.0	385.0*	240.5	406.3*
	(223.4)	(223.1)	(176.7)	(218.7)
Mean of the WTP to hide (in FCFA)	688.5	650	776.1	652.4
Number of observations	386	260	385	264
AIC	3698.1	2390.2	3846.3	2548.4
Test Chi-2 (p-value)	0.00	0.00	0.00	0.00

Interval-data regression model; s.e. clustered at the session level in (); $^{+}p < 0.12$,$^{*}p < 0.10$,$^{**}p < 0.05$,$^{***}p < 0.01$. Interval-censored data regression model;
† Dependant variable: maximum price p willing to pay to hide. It is observed in intervals for a price $p \leq 1000$ FCFA: $\{\ ]-\infty; 0[\,; [0; 200[\,; [200; 500[\,; [500; 700[\,; [700; 1000[\}$. The exact price is observed for price above 1000 FCFA (specific question).
The median of the daily household food expenditures per capita is 420 FCFA.
Controls not shown: same controls as in Table 18.

Table 18: The Determinants of the Willingness-to-pay to hide income
Interval-censored regression model

Maximum WTP to hide†	**All** (1)	**Women** (1w)	**Men** (1m)
Experimental variations			
Selected in household pair	−17.9	−122.4	110.1
	(110.7)	(120.5)	(211.0)
Any known non-kin in the session	−16.0	−94.3	89.5
	(150.2)	(131.2)	(335.4)
Any kin in the session (excl. pairs)	271.1**	444.7***	−265.3
	(134.8)	(132.5)	(301.0)
Individual demographics			
Male	192.4*		
	(105.4)		
Age	−1.9	−5.3	1.2
	(5.1)	(5.9)	(12.0)
French/Arabic education	−66.9	−77.7	−18.4
	(104.7)	(129.0)	(199.2)
Koranic education	−100.4	−137.7	11.1
	(103.3)	(113.2)	(173.8)
Single	232.7**	185.5	558.1**
	(116.3)	(145.6)	(252.9)
Individual economic situation			
Formal sector	−154.9*	−167.6	−95.9
	(92.2)	(120.6)	(253.2)
Average income in last 3 months (log)	12.3**	15.2*	11.1
	(6.0)	(7.8)	(14.1)
Has some savings	102.8	54.0	263.2
	(77.2)	(107.6)	(181.5)
Individual position in the household			
Household head	355.2**	433.0*	473.9**
	(170.9)	(224.6)	(232.9)
Spouse of household head	275.5*	273.3*	
	(145.4)	(150.2)	
Child of household head	40.6	−138.0	390.8*
	(143.8)	(172.9)	(217.1)
Contributes to household food expenses	35.7	−20.4	24.4
	(111.7)	(116.3)	(243.9)
Individual position in the community			
Always lived in this community	193.0	379.7***	−314.1
	(135.0)	(139.9)	(247.1)
Responsibility in community	−494.7***	−91.4	−1315.8***
	(113.9)	(164.6)	(296.7)
Household demographic & economic situation			
Household size	14.4	19.5	17.3
	(11.4)	(12.7)	(22.2)
Share of dependent members (%)	−3.6	−7.9**	8.4
	(3.0)	(3.3)	(6.7)
Daily food consumption per cap. (in log)	211.8*	94.5	465.8*
	(121.8)	(116.2)	(267.6)
House is rented	−111.4	−11.7	−450.6**
	(107.3)	(131.6)	(197.2)
Constant	−960.2	315.9	−3480.6*
	(791.8)	(787.5)	(2010.7)
Mean of the WTP to hide (in FCFA)	732.4	651.2	902.7
Number of observations	771	524	247
AIC	7512.7	4914.9	2592.5
Test Chi-2 (p-value)	0.00	0.00	0.00

Interval-data regression model; s.e. clustered at the session level in (); $^{+}p < 0.12$,$^{*}p < 0.10$,$^{**}p < 0.05$,$^{***}p < 0.01$.

† Dependant variable: maximum price p willing to pay to hide. It is observed in intervals for a price $p \leq 1000$ FCFA: $\{\ ]-\infty;0[\,;[0;200[\,;[200;500[\,;[500;700[\,;[700;1000[\}$. The exact price is observed for price above 1000 FCFA (specific question).

Controls not shown : can read (dummy), Wolof and Muslim dummies.

Table 19: Willingness-to-pay for income unobservability estimation
Interval regression model - Below/above the median of household food expenditures
Sample: all and women only - All controls shown

	Below Median		**Above Median**	
	All	*Women*	*All*	*Women*
	1	$1w$	2	$2w$
Experimental variations				
Selected in household pair	152.8	32.5	−131.7	−179.0
	(151.8)	(162.5)	(138.7)	(152.6)
Any known non-kin in the session	−15.0	19.1	6.5	−98.6
	(155.5)	(128.2)	(259.8)	(195.9)
Any kin in the session (excl. pairs)	283.0	385.0*	240.5	406.3*
	(223.4)	(223.1)	(176.7)	(218.7)
Individual demographics				
Male	45.4		323.0*	
	(160.3)		(168.9)	
Age	5.4	−1.8	−8.7	−11.4+
	(6.1)	(8.3)	(7.6)	(7.0)
French/Arabic education	−134.2	−248.5	−57.4	11.3
	(177.3)	(239.8)	(147.1)	(176.4)
Koranic education	−57.5	−55.1	−145.3	−162.1
	(145.2)	(130.7)	(123.6)	(160.8)
Single	357.4*	271.5	127.3	53.1
	(194.2)	(247.6)	(131.3)	(212.8)
Individual economic situation				
Formal sector	−344.1**	−484.8**	−38.0	46.5
	(165.6)	(217.5)	(168.3)	(168.8)
Average income in last 3 months (log)	17.9*	28.7**	4.9	5.0
	(10.5)	(14.1)	(12.2)	(12.1)
Has some savings	118.0	120.6	150.1	84.0
	(95.0)	(103.6)	(136.8)	(147.1)
Individual position in the household				
Household head	493.9**	627.7	310.8	431.2*
	(246.3)	(416.7)	(229.9)	(223.7)
Spouse of household head	84.4	102.8	456.4**	416.5**
	(188.7)	(224.0)	(214.2)	(190.7)
Child of household head	−16.4	−212.6	123.1	−9.2
	(144.1)	(173.1)	(191.8)	(203.1)
Contributes to household food expenses	49.7	−3.5	12.2	25.0
	(156.6)	(161.9)	(209.4)	(181.0)
Individual position in the community				
Always lived in this community	285.4***	442.5***	56.4	233.2
	(109.7)	(160.6)	(197.3)	(212.8)
Responsibility in community	−247.0	71.1	−680.5***	−150.2
	(186.8)	(308.3)	(207.7)	(226.3)
Household demographic & economic situation				
Household size	16.1	16.2	−0.5	25.8
	(12.9)	(16.5)	(18.4)	(16.9)
Share of dependent household mbrs (%)	−4.3	−11.5**	−4.1	−7.9**
	(3.8)	(5.2)	(4.3)	(3.8)
Daily food consumption per cap. (in log)	157.3	62.8	271.5	89.2
	(246.0)	(294.9)	(206.7)	(240.2)
household doesn't own house	−95.7	25.9	−220.0	−31.9
	(135.1)	(132.7)	(165.6)	(199.1)
Constant	−799.0	218.2	−1161.4	432.6
	(1521.9)	(1853.8))	(1262.6)	(1597.0)
Mean of the WTP to hide (in FCFA)	688.5	650	776.1	652.4
Number of observations	386	260	385	264
AIC	3698.1	2390.2	3846.3	2548.4
Test Chi-2 (p-value)	0.00	0.00	0.00	0.00

Interval-data regression model; s.e. clustered at the session level in (); $^{+}p < 0.12$,$^{*}p < 0.10$,$^{**}p < 0.05$,$^{***}p < 0.01$.
Interval-censored data regression model;
† Dependant variable: maximum price p willing to pay to hide. It is observed in intervals for a price $p \leq 1000$ FCFA: $\{\ ]-\infty;0[\,;[0;200[\,;[200;500[\,;[500;700[\,;[700;1000[\}$. The exact price is observed for price above 1000 FCFA (specific question).
The median of the daily household food expenditures per capita is 420 FCFA.
Controls not shown : can read (dummy), Wolof and Muslim dummies.

Table 20: Willingness-to-pay for income unobservability estimation – *Logit model (average marginal effects)*

Maximum WTP to hide†	**All** (1)	**Women** (1w)	**Men** (1m)
Experimental variations			
Selected in household pair	−0.006	−0.004	−0.054
	(0.040)	(0.045)	(0.070)
Any known non-kin in the session	0.027	−0.018	0.129^{+}
	(0.042)	(0.058)	(0.081)
Any kin in the session (excl. pairs)	0.107*	0.192***	−0.063
	(0.056)	(0.058)	(0.088)
Individual demographic situation			
Male	0.024		
	(0.041)		
Age	−0.002	−0.003	−0.001
	(0.002)	(0.002)	(0.004)
French/Arabic education	−0.102**	−0.075	−0.156*
	(0.048)	(0.055)	(0.094)
Koranic education	−0.031	−0.046	−0.004
	(0.037)	(0.046)	(0.060)
Single	0.096**	0.103	0.166**
	(0.041)	(0.070)	(0.084)
Individual economic situation			
Formal sector	−0.033	0.002	−0.011
	(0.032)	(0.065)	(0.078)
Average income in last 3 months (log)	0.002	0.005	−0.001
	(0.003)	(0.003)	(0.005)
Has some savings	0.023	0.023	0.041
	(0.031)	(0.042)	(0.070)
Individual position in the household			
Household head	0.134*	0.173*	0.112^{+}
	(0.070)	(0.099)	(0.072)
Spouse of household head	0.081*	0.089*	
	(0.048)	(0.054)	
Child of household head	−0.011	−0.080	0.074
	(0.050)	(0.072)	(0.050)
Contributes to household food expenses	−0.023	−0.058	0.014
	(0.039)	(0.048)	(0.078)
Individual position in the community			
Always lived in this community	0.004	0.045	−0.121
	(0.044)	(0.041)	(0.082)
Has a responsibility in community	−0.152***	−0.016	−0.349***
	(0.035)	(0.069)	(0.070)
Household demographic & economic situation			
Household size	0.005	0.006	0.006
	(0.004)	(0.005)	(0.008)
Share of dependent household mbrs (%)	−0.002	−0.004***	0.003*
	(0.001)	(0.001)	(0.002)
LN household food expendit. per c. last 3mth	0.040	0.016	0.107
	(0.029)	(0.041)	(0.069)
Household doesn't own house	−0.041	−0.020	−0.102
	(0.049)	(0.053)	(0.081)
Mean of the WTP to hide (in FCFA)	0.65	0.65	0.66
Number of observations	771	524	247
Test Chi-2 (p-value)	0.000	0.000	0.000

Logit model (average marginal effects); Dependent variable : dummy equal to 1 if the WTP is positive ; s.e. clustered at the session level in (); $+p < 0.12, *p < 0.10, **p < 0.05, ***p < 0.01$.
Controls not shown : can read (dummy), Wolof and Muslim dummies.

12 Appendix D: Results on the effect of hidden income

12.1 Complementary results

Table 21: Test of correlation between preferences for hidden income and lottery outcome

Drawing a private card	(1)	(2)	(3)	(4)	(5)
WTP to hide ≥ 0	0.042	0.044	0.044	0.043	0.043
	(0.235)	(0.225)	(0.225)	(0.245)	(0.245)
N	795	795	795	795	795
AIC	1073.1	1120.3	1120.3	1156.5	1156.5
R2	0.0018	0.010	0.010	0.049	0.049
Community & Session-time f.e.		X		X	
Session f.e.			X		X
Interviewer f.e.				X	X

Dependant var: Dummy, drawing a private card versus a control public card. LPM model. P-values in (); $^{*}0.1$,** 0.05,*** 0.01

Table 22: The effect of the opportunity to hide on allocation choices of the lottery gains
Sample: all individuals - Without controls

Dependant var:	Expenditures				Transfers			
Commodity shares	Personal	Health	Hh non-food	Hh food	To kin	To non-kin	Investment	Saved gains
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A (N=682): Whole sample								
Card with opportunity to hide	2.920	1.228	−1.858	−0.429	−2.176	0.692	−1.420	0.412
	(2.352)	(1.269)	(2.080)	(3.084)	(2.296)	(0.935)	(2.723)	(1.415)
R^2	0.02	0.01	0.04	0.02	0.02	0.01	0.02	0.01
Chi-2 (p-value)	0.18	0.42	0.00	0.40	0.19	0.46	0.11	0.75
Panel B (N=448): WTP to hide† ≥ 0								
Card with opportunity to hide	4.261^{+}	2.264	−3.185	1.571	−6.326**	1.730	−2.156	0.351
	(2.682)	(1.506)	(2.478)	(3.774)	(2.900)	(1.219)	(3.417)	(1.773)
R^2	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.02
Chi-2 (p-value)	0.15	0.15	0.12	0.20	0.64	0.11	0.13	0.58
Panel C (N=234): WTP to hide† < 0								
Card with opportunity to hide	1.359	−0.415	0.500	−2.762	4.591	−1.417	−1.175	0.369
	(3.408)	(2.328)	(3.796)	(5.347)	(3.716)	(1.410)	(4.471)	(2.377)
R^2	0.03	0.01	0.06	0.03	0.08	0.02	0.06	0.01
Chi-2 (p-value)	0.80	0.98	0.14	0.78	0.03	0.87	0.12	0.98
Panel D (N=682): Testing heterogeneity across WTP to hide†								
Card opportunity to hide × WTP to hide ≥ 0‡	3.529	2.832	−3.918	4.455	−11.392**	2.999	−0.985	−0.107
	(4.428)	(2.662)	(4.362)	(6.467)	(4.796)	(1.959)	(5.718)	(2.972)
R^2	0.02	0.02	0.04	0.02	0.03	0.02	0.02	0.01
Chi-2 (p-value)	0.29	0.45	0.01	0.40	0.05	0.37	0.19	0.87
Panel E: Unconditional means								
Public cards (N=164)	10.754	2.724	11.495	26.445	20.7	3.144	17.344	5.599
Public cards & WTP >=0 (N=104)	10.989	1.784	12.042	24.047	24.713	2.556	17.361	5.599
Public cards & WTP <0 (N=60)	10.347	4.352	10.548	30.601	13.742	4.164	17.314	5.599

S.e. in (). $^{+}$ p ≤ 0.12, * p ≤ 0.1, ** p ≤ 0.05, *** p ≤ 0.01. Panels A, B, C & D: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
‡ In Panel D, main effects are also included: WTP to hide and card with opportunity to hide lottery gains.
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Samples: in all panels, individuals who drew the card 1000 FCFA in public are excluded. Panel A and D: whole sample. Panel B (resp. C): sample with positive (resp. negative) WTP to hide income.
No controls. Community and session time fixed effects included in all panels and for all outcomes.

Table 23: Effect of the opportunity to hide on *transfers to kin in/out the household* and on allocation choices of lottery gains - *Sample: all individuals*

Dependant var:	Expenditures				**Transfers**				
Commodity shares	Personal	Health	Hh non-food	Hh food	**To hh**	**To kin out hh**	**To non-kin**	Investment	Saved gains
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A (N=654): Whole sample									
Card with opportunity to hide	3.965*	1.435	−1.396	−0.702	−0.112	−2.022*	0.381	−1.897	0.303
	(2.101)	(1.327)	(2.139)	(3.030)	(2.005)	(1.169)	(0.971)	(2.711)	(1.473)
R^2	0.09	0.04	0.06	0.11	0.13	0.05	0.05	0.10	0.03
Chi-2 (p-value)	0.00	0.68	0.04	0.00	0.00	0.23	0.10	0.00	0.54
Panel B (N=433): WTP to hide$^{\dagger} \geq 0$									
Card with opportunity to hide	4.986*	2.713*	−3.411	1.765	−2.396	−3.358**	1.441	−2.871	0.607
	(2.711)	(1.560)	(2.568)	(3.642)	(2.440)	(1.564)	(1.273)	(3.383)	(1.845)
R^2	0.10	0.06	0.07	0.16	0.15	0.08	0.06	0.12	0.05
Chi-2 (p-value)	0.00	0.27	0.25	0.00	0.00	0.06	0.25	0.00	0.72
Panel C (N=221): WTP to hide$^{\dagger} < 0$									
Card with opportunity to hide	1.962	0.017	0.010	−5.014	5.828+	−1.501	−1.653	2.243	−0.679
	(3.396)	(2.523)	(3.937)	(5.462)	(3.669)	(1.687)	(1.475)	(4.572)	(2.482)
R^2	0.14	0.07	0.15	0.13	0.18	0.11	0.13	0.17	0.12
Chi-2 (p-value)	0.06	0.95	0.09	0.12	0.01	0.31	0.14	0.00	0.26
Panel D (N=654): Testing heterogeneity across WTP to hide†									
Card opportunity to hide × WTP to hide $\geq 0^{\ddagger}$	3.351	3.231	−4.855	4.917	−7.177*	−2.337	2.797	−2.362	0.510
	(4.428)	(2.791)	(4.533)	(6.389)	(4.258)	(2.490)	(2.043)	(5.726)	(3.113)
R^2	0.10	0.04	0.06	0.11	0.13	0.05	0.06	0.10	0.03
Chi-2 (p-value)	0.00	0.69	0.05	0.00	0.00	0.15	0.11	0.00	0.65
Panel E: Unconditional means									
Public cards (N=164)	10.754	2.724	11.495	26.445	15.38	4.643	3.144	17.344	5.599
Public cards & WTP >=0 (N=104)	10.989	1.784	12.042	24.047	17.769	5.876	2.556	17.361	5.599
Public cards & WTP <0 (N=60)	10.347	4.352	10.548	30.601	11.238	2.504	4.164	17.314	5.599

S.e. in (). $^{+}$ p ≤ 0.12, * p ≤ 0.1, ** p ≤ 0.05, *** p ≤ 0.01. Panels A, B, C & D: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
‡ In Panel D, main effects are also included: WTP to hide and card with opportunity to hide lottery gains.
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Samples: in all panels, individuals who drew the card 1000 FCFA in public are excluded. Panel A and D: whole sample. Panel B (resp. C): sample with positive (resp. negative) WTP to hide income.
Control variables: same as in Table 3.
Community fixed effects included in all panels and for all outcomes.

Table 24: Effects of the opportunity to hide on allocation choices of lottery gains
Samples: below/above median of food consumption

Dependant var:	Expenditures				Transfers			
Commodity shares	Personal	Health	Hh non-food	Hh food	To kin	To non-kin	Investment	Saved gains
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Sample $\leq$ median of household daily food consumption								
Panel A1 (N=356): All								
Card with opportunity to hide	2.650	2.923^{+}	−1.726	−0.504	−2.957	0.545	−3.688	1.059
	(2.771)	(1.853)	(2.885)	(4.172)	(2.991)	(1.330)	(3.238)	(2.208)
R^2	0.09	0.06	0.06	0.11	0.15	0.09	0.13	0.06
Chi-2 (p-value)	0.02	0.81	0.55	0.02	0.00	0.11	0.00	0.55
Panel A2 (N=230): WTP $\geq$ 0								
Card with opportunity to hide	4.837	3.520	−0.739	4.503	−6.535*	0.810	−7.738*	−0.909
	(3.435)	(2.291)	(3.439)	(4.957)	(3.669)	(1.792)	(4.021)	(2.811)
R^2	0.12	0.12	0.11	0.19	0.18	0.13	0.20	0.08
Chi-2 (p-value)	0.06	0.37	0.42	0.00	0.00	0.15	0.00	0.75
Panel A3: Unconditional means								
Public cards (N=89)	11.822	1.81	11.799	28.493	20.679	2.633	16.011	3.777
Public cards & WTP >=0 (N=59)	11.414	1.977	11.321	25.436	23.713	2.612	16.441	4.896
Panel B: Sample > median of household daily food consumption								
Panel B1 (N=298): All								
Card with opportunity to hide	6.177**	−0.469	−0.641	0.157	−3.202	−0.111	−0.390	−1.245
	(3.105)	(1.843)	(3.141)	(4.348)	(3.377)	(1.412)	(4.369)	(1.813)
R^2	0.19	0.11	0.14	0.18	0.11	0.05	0.17	0.09
Chi-2 (p-value)	0.00	0.12	0.01	0.00	0.09	0.89	0.00	0.21
Panel B2 (N=203): WTP $\geq$ 0								
Card with opportunity to hide	7.332*	1.119	−3.362	−2.332	−7.989*	2.198	0.214	2.375
	(4.253)	(1.956)	(3.702)	(5.278)	(4.218)	(1.758)	(5.439)	(2.235)
R^2	0.18	0.13	0.20	0.24	0.17	0.11	0.19	0.15
Chi-2 (p-value)	0.01	0.49	0.00	0.00	0.03	0.41	0.00	0.10
Panel B3: Unconditional means								
Public cards (N=75)	9.486	3.807	11.134	24.015	20.724	3.752	18.926	2.775
Public cards & WTP >=0 (N=45)	10.431	1.531	12.988	22.226	26.025	2.483	18.568	2.279

S.e. in (). $^{+}$ $p \leq 0.12$, * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$. Panels A, B, C & D: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
‡ In Panel D, main effects are also included: WTP to hide and card with opportunity to hide lottery gains.
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Samples: all individuals. In all panels, individuals who drew the card 1000 FCFA in public are excluded. Panels A (resp. B) correspond to individuals below or equal (resp. strictly above) to the median of household daily food consumption. Panels A1 and B1: whole sample, A2 and B2 : sample with positive WTP to hide income, A3 and B3: unconditional means.
Control variables: same as in Table 3.
Community fixed effects included in all panels and for all outcomes.
The median of the daily household food expenditures per capita is 420 FCFA.

Table 25: Effect of the opportunity to hide on allocation choices of lottery gains
Sample: Women

Dependant var:	Expenditures				Transfers			
Commodity shares	Personal	Health	Hh non-food	Hh food	To kin	To non-kin	Investment	Saved gains
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A (N=450): Whole sample								
Card with opportunity to hide	2.995	0.762	−0.961	0.431	−2.430	0.562	−4.104	1.084
	(2.437)	(1.580)	(2.483)	(3.474)	(2.578)	(1.165)	(3.558)	(1.707)
R^2	0.11	0.07	0.06	0.11	0.08	0.05	0.08	0.05
Chi-2 (p-value)	0.00	0.22	0.25	0.00	0.04	0.47	0.03	0.49
Panel B (N=293): WTP to hide$^{\dagger} \geq 0$								
Card with opportunity to hide	4.299	2.624	−3.686	3.940	−3.847	1.638	-7.506^{+}	1.613
	(3.277)	(1.859)	(2.928)	(4.305)	(3.179)	(1.551)	(4.600)	(2.125)
R^2	0.12	0.10	0.10	0.18	0.11	0.07	0.10	0.08
Chi-2 (p-value)	0.02	0.11	0.21	0.00	0.06	0.54	0.13	0.40
Panel C (N=157): WTP to hide$^{\dagger} < 0$								
Card with opportunity to hide	2.692	−1.508	−0.163	−7.430	2.884	−1.797	1.144	1.534
	(3.705)	(3.106)	(4.809)	(6.114)	(4.598)	(1.813)	(5.848)	(2.988)
R^2	0.20	0.11	0.13	0.15	0.20	0.16	0.18	0.16
Chi-2 (p-value)	0.03	0.90	0.58	0.26	0.07	0.31	0.07	0.20
Panel D (N=450): Testing heterogeneity across WTP to hide†								
Card hide × WTP to hide $\geq 0^{\ddagger}$	3.303	4.886	−6.127	10.152	−5.370	3.227	−8.172	−0.062
	(5.154)	(3.350)	(5.312)	(7.373)	(5.529)	(2.486)	(7.576)	(3.633)
R^2	0.12	0.08	0.07	0.12	0.08	0.06	0.08	0.05
Chi-2 (p-value)	0.00	0.20	0.25	0.00	0.06	0.48	0.03	0.52
Panel E: Unconditional means								
Public cards (N=113)	10.544	3.461	10.934	23.939	19.799	2.884	22.729	2.85
Public cards & WTP >=0 (N=69)	11.618	1.884	11.868	19.922	21.763	1.74	25.443	3.419
Public cards & WTP <0 (N=44)	8.861	5.934	9.47	30.239	16.719	4.679	18.472	1.957

S.e. in (). $^{+}$ $p \leq 0.12$, * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$. Panels A, B, C & D: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
‡ In Panel D, main effects are also included: WTP to hide and card with opportunity to hide lottery gains.
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Samples: women. In all panels, individuals who drew the card 1000 FCFA in public are excluded. Panel A and D: whole sample. Panel B (resp. C): sample with positive (resp. negative) WTP to hide income.
Control variables: same as in Table 3.
Community fixed effects included in all panels and for all outcomes.

Table 26: Effect of the opportunity to hide on *transfers in/out the household* and on allocation choices of lottery gains - *Sample: Men*

Dependant var:	Expenditures				**Transfers**				
Commodity shares	Personal	Health	Hh non-food	Hh food	**To hh**	**To kin out hh**	**To non-kin**	Investment	Saved gains
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A (N=204): Whole sample									
Card with opportunity to hide	6.610^{+}	2.199	−3.631	−0.837	1.667	−4.529*	−0.105	0.312	−0.796
	(4.086)	(2.398)	(4.005)	(6.033)	(3.893)	(2.508)	(1.754)	(3.521)	(2.812)
R^2	0.16	0.07	0.18	0.17	0.24	0.13	0.12	0.16	0.13
Chi-2 (p-value)	0.01	0.53	0.00	0.00	0.00	0.36	0.00	0.04	0.14
Panel B (N=140): WTP to hide$^{\dagger} \geq 0$									
Card with opportunity to hide	9.184*	2.478	−5.215	−0.769	−4.120	−8.171**	0.417	3.403	−0.639
	(4.933)	(2.924)	(4.893)	(6.833)	(4.570)	(3.254)	(2.213)	(3.823)	(3.495)
R^2	0.17	0.09	0.18	0.22	0.29	0.20	0.18	0.23	0.17
Chi-2 (p-value)	0.00	0.90	0.00	0.00	0.00	0.14	0.13	0.00	0.23
Panel C (N=64): WTP to hide$^{\dagger} < 0$									
Card with opportunity to hide	6.329	3.224	−8.815	16.374	19.094**	2.405	−1.946	−8.197	−8.857*
	(7.969)	(4.566)	(7.728)	(12.431)	(8.088)	(3.382)	(2.793)	(7.432)	(4.664)
R^2	0.35	0.40	0.45	0.38	0.42	0.39	0.34	0.39	0.40
Chi-2 (p-value)	0.06	0.01	0.00	0.02	0.00	0.01	0.00	0.01	0.00
Panel D (N=204): Testing heterogeneity across WTP to hide†									
Card opportunity to hide × WTP to hide $\geq 0^{\ddagger}$	4.063	−0.166	−2.515	−5.671	−17.272**	−10.020*	0.441	12.384*	1.819
	(8.700)	(5.235)	(8.654)	(12.875)	(8.412)	(5.414)	(3.742)	(7.484)	(6.063)
R^2	0.16	0.08	0.19	0.17	0.26	0.15	0.13	0.18	0.14
Chi-2 (p-value)	0.00	0.99	0.01	0.03	0.00	0.01	0.00	0.00	0.00
Panel E: Unconditional means									
Public cards (N=51)	11.218	1.089	12.738	31.997	16.267	6.427	3.721	5.413	4.357
Public cards & WTP >=0 (N=35)	9.749	1.587	12.385	32.18	21.164	9.365	4.166	1.429	4.444
Public cards & WTP <0 (N=16)	14.432	0	13.511	31.597	5.556	0	2.748	14.13	4.167

S.e. in (). $^{+}$ p ≤ 0.12, * p ≤ 0.1, ** p ≤ 0.05, *** p ≤ 0.01. Panels A, B, C & D: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
‡ In Panel D, main effects are also included: WTP to hide and card with opportunity to hide lottery gains.
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Samples: Men. In all panels, individuals who drew the card 1000 FCFA in public are excluded. Panel A and D: whole sample. Panel B (resp. C): sample with positive (resp. negative) WTP to hide income.
Control variables: same as in Table 3.
Community fixed effects included in all panels and for all outcomes.

12.2 Robustness checks

Table 27: Effect of the opportunity to hide for *different levels of the willingness to pay to hide*
Sample: all individuals

Dependant var:	Expenditures				Transfers			
Commodity shares	Personal (1)	Health (2)	Hh non-food (3)	Hh food (4)	To kin (5)	To non-kin (6)	Investment (7)	Saved gains (8)
Panel A (N=654): Whole sample								
Card with opportunity to hide	3.966*	1.446	−1.389	−0.704	−2.655	0.386	−1.895	0.302
	(2.101)	(1.327)	(2.139)	(3.030)	(2.257)	(0.971)	(2.711)	(1.473)
R^2	0.09	0.04	0.06	0.11	0.10	0.05	0.10	0.03
Chi-2 (p-value)	0.00	0.70	0.03	0.00	0.00	0.11	0.00	0.54
Panel B (N=433): WTP to hide$^\dagger \geq 0$								
Card with opportunity to hide	4.989*	2.727*	−3.394	1.766	−6.720**	1.456	−2.873	0.607
	(2.711)	(1.560)	(2.568)	(3.642)	(2.795)	(1.273)	(3.383)	(1.845)
R^2	0.10	0.06	0.07	0.16	0.11	0.06	0.12	0.05
Chi-2 (p-value)	0.00	0.24	0.20	0.00	0.00	0.26	0.00	0.72
Panel C (N=389): WTP to hide$^\dagger \geq 200$								
Card with opportunity to hide	4.313+	2.335	−4.215+	1.475	−5.824**	1.103	−1.552	0.641
	(2.771)	(1.519)	(2.659)	(3.802)	(2.966)	(1.268)	(3.540)	(1.939)
R^2	0.11	0.07	0.07	0.17	0.11	0.08	0.11	0.05
Chi-2 (p-value)	0.00	0.24	0.34	0.00	0.00	0.08	0.00	0.64
Panel D (N=333): WTP to hide$^\dagger \geq 700$								
Card with opportunity to hide	5.457*	2.241	−3.912	0.804	−8.037**	0.685	−1.889	1.864
	(3.124)	(1.538)	(2.732)	(4.032)	(3.306)	(1.428)	(3.976)	(2.138)
R^2	0.12	0.08	0.08	0.19	0.11	0.08	0.13	0.06
Chi-2 (p-value)	0.00	0.49	0.17	0.00	0.02	0.21	0.00	0.62
Panel E (N=221): WTP to hide$^\dagger < 0$								
Card with opportunity to hide	1.965	0.074	−0.012	−5.033	4.531	−1.655	2.223	−0.692
	(3.396)	(2.523)	(3.936)	(5.462)	(3.934)	(1.475)	(4.572)	(2.482)
R^2	0.14	0.06	0.15	0.13	0.17	0.13	0.17	0.12
Chi-2 (p-value)	0.06	0.94	0.08	0.12	0.00	0.14	0.00	0.26
Panel F: Unconditional means								
Public cards (N=164)	10.754	2.724	11.495	26.445	20.7	3.144	17.344	5.599
Public cards & WTP >=0 (N=104)	10.989	1.784	12.042	24.047	24.713	2.556	17.361	5.599
Public cards & WTP <0 (N=60)	10.347	4.352	10.548	30.601	13.742	4.164	17.314	5.599

S.e. in (). + $p \leq 0.12$, * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$. Panels A, B, C & D: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
‡ In Panel D, main effects are also included: WTP to hide and card with opportunity to hide lottery gains.
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Samples: in all panels, individuals who drew the card 1000 FCFA in public are excluded. Panel A and D: whole sample. Panel B (resp. C): sample with positive (resp. negative) WTP to hide income.
Control variables: same as in Table 3.
Community fixed effects included in all panels and for all outcomes.

Table 28: Testing for the no-income effect hypothesis
Subsample: no-option cards, all with lottery gains = 9000 FCFA

Dependant var:	Expenditures				Transfers			
Commodity shares	Personal	Health	Hh non-food	Hh food	To kin	To non-kin	Investment	Saved gains
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A (N=304): Whole sample								
Card with opportunity to hide	3.710	0.910	−0.423	−3.292	−1.898	0.666	−1.503	0.917
	(2.526)	(1.473)	(2.714)	(3.784)	(2.776)	(1.291)	(3.490)	(1.827)
R^2	0.12	0.07	0.13	0.15	0.17	0.12	0.10	0.09
Chi-2 (p-value)	0.02	0.82	0.03	0.00	0.00	0.02	0.15	0.14
Panel B (N=210): WTP to hide$^{\dagger} \geq 0$								
Card with opportunity to hide	5.276*	0.680	−2.353	−0.580	−6.245*	2.174	−2.069	0.812
	(3.134)	(1.516)	(3.238)	(4.411)	(3.335)	(1.555)	(4.077)	(2.154)
R^2	0.14	0.11	0.14	0.22	0.24	0.16	0.16	0.11
Chi-2 (p-value)	0.10	0.35	0.12	0.00	0.00	0.03	0.03	0.39
Panel C (N=94): WTP to hide$^{\dagger} < 0$								
Card with opportunity to hide	−8.044*	0.573	5.461	−20.332**	7.256	−0.129	8.017	6.118*
	(4.651)	(3.775)	(5.777)	(8.023)	(5.073)	(2.649)	(7.328)	(3.545)
R^2	0.29	0.22	0.29	0.25	0.36	0.22	0.21	0.37
Chi-2 (p-value)	0.06	0.55	0.04	0.07	0.00	0.14	0.43	0.00
Panel D (N=304): Testing heterogeneity across WTP to hide†								
Card opportunity to hide × WTP to hide $\geq 0^{\ddagger}$	8.015	−0.055	−6.630	9.770	−12.444**	4.958*	−4.126	−1.311
	(5.606)	(3.296)	(6.062)	(8.421)	(6.147)	(2.861)	(7.781)	(4.073)
R^2	0.13	0.07	0.13	0.16	0.19	0.13	0.10	0.10
Chi-2 (p-value)	0.02	0.78	0.04	0.00	0.00	0.01	0.21	0.19
Panel E: Unconditional means								
Public cards (N=164)	10.754	2.724	11.495	26.445	20.7	3.144	17.344	5.599
Public cards & WTP >=0 (N=104)	10.989	1.784	12.042	24.047	24.713	2.556	17.361	5.599
Public cards & WTP <0 (N=60)	10.347	4.352	10.548	30.601	13.742	4.164	17.314	5.599

S.e. in (). $^{+}$ $p \leq 0.12$, * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$. Panels A, B, C & D: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
‡ In Panel D, main effects are also included: WTP to hide and card with opportunity to hide lottery gains.
Dependant var: Share of lottery gains allocated to the various commodities. One column per commodity.
Samples: in all panels, individuals who drew the no-option card 9000 FCFA in public or the no-option card 1000 FCFA in public and 8000 FCFA in private. Panel A and D: whole sample. Panel B (resp. C): sample with positive (resp. negative) WTP to hide income.
Control variables: same as in Table 3.
Community fixed effects included in all panels and for all outcomes.

Table 29: Testing the fungibility of the gains: effect of the opportunity to hide on the share of *total* income devoted to transfers - *Sample: all individuals*

Commodity shares	*Non-transfer consumption*	*Transfers to kin*	*Transfers to non-kin*
Panel A (N=669): Whole sample			
Card with opportunity to hide	3.870*	−4.158**	0.156
	(2.155)	(1.934)	(0.988)
R^2	0.07	0.08	0.04
Chi-2 (p-value)	0.00	0.00	0.33
Panel B (N=439): WTP to hide$^{\dagger} \geq 0$			
Card with opportunity to hide	4.364*	−5.866***	1.736
	(2.574)	(2.268)	(1.272)
R^2	0.07	0.09	0.06
Chi-2 (p-value)	0.14	0.01	0.38
Panel C (N=230): WTP to hide$^{\dagger} < 0$			
Card with opportunity to hide	3.610	−2.327	−2.113
	(3.928)	(3.568)	(1.584)
R^2	0.16	0.17	0.09
Chi-2 (p-value)	0.01	0.01	0.69
Panel D (N=669): Testing heterogeneity across WTP to hide†			
Card opportunity to hide × WTP to hide $\geq 0^{\ddagger}$	1.416	−3.988	3.581*
	(4.523)	(4.056)	(2.069)
R^2	0.07	0.08	0.04
Chi-2 (p-value)	0.00	0.00	0.27
Panel E: Unconditional means			
Public cards (N=164)	78.576	18.279	3.399
Public cards & WTP >=0 (N=104)	78.76	18.655	2.585
Public cards & WTP <0 (N=60)	78.257	17.626	4.811

S.e. in (). $^{+}$ p ≤ 0.12, * p ≤ 0.1, ** p ≤ 0.05, *** p ≤ 0.01
Dependant var: Share of *total* post-lab income – labor income, received transfers and lottery gains – allocated to the various commodities. One column per commodity. Panels A , B, C & D: System of linear equations estimated with a SUR model.
Sample: in all panels, individuals who drew the card 1000 FCFA in public are excluded. Panel A and D: whole sample, Panel B: sample with positive WTP to hide income , Panel C: sample with stricltly negative WTP to hide income.
Control variables: same as in Table 3.
Community fixed effects included in all panels.

12.3 Intra-household decision-making channels

Table 30: Relationships shared in the selected intra-household pairs

Relationships	Frequency	Percentage
Spouses	42	15.85
Child-Parent	50	18.87
Siblings	64	24.15
Niece/Aunt-Cousin	24	9.06
Child-in-law/Parent-in-law	9	3.4
Siblings in law	24	9.06
Other kin	24	9.06
Other non kins	9	3.4
Missing link	19	7.17
Total pairs	328	100