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PARIS-JOURDAN SCIENCES ECONOMIQUES
48, BD JOURDAN – E.N.S. – 75014 PARIS
TÉL. : 33(0) 1 43 13 63 00 – FAX : 33 (0) 1 43 13 63 10
www.pse.ens.fr

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

Marie Boltz, Karine Marazyan, and Paola Villar*

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Abstract

This paper estimates the hidden cost of informal redistribution in urban Senegal. It is based on a lab-in-the-field experiment combined with a small-scale randomized controlled trial. We show that two-thirds of the experiment participants are ready to forgo up to 14% of their lab gains to keep them private. When they are given the opportunity to hide, they decrease by 27% the share of gains they transfer to kin and increase health and personal expenses. This is the first paper to identify the individual cost of informal redistribution and to relate it to real-life resource-allocation decisions in a controlled setting.

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*Boltz: corresponding author: University of Namur, CRED, and Paris School of Economics, Address: Rempart de la Vierge 8, B-5000 Namur; e-mail: marie.boltz@psemail.eu. Marazyan: University of Paris 1 - IEDES - UMR "Developpement et Societes", karine.marazyan@univ-paris1.fr. Villar: Institut National d'Etudes Demographiques (INED) and Paris School of Economics (PSE), paola.villar@psemail.eu. The authors are thankful to the CEPREMAP, the PSE Research Fund, the Sarah Andrieux Fund, the Chair G-Mond, the IRD, and the UMR Développement et Société, for their financial support for this research project. We particularly would like to thank Jean-Marie Baland, Xavier Gine, Laurent Gobillon, Isabel Günther, Marc Gurgand, Sergei Guriev, Elise Huillery, Kenneth Houngbedji, Pamela Jakiela, Sylvie Lambert, Dan Levin, Karen Macours, Alice Mesnard, Owen Ozier and numerous conference and seminar participants for their valuable comments. We also thank Virginie Comblon, Rozenn Hotte, Björn Nilsson, and Anne-Sophie Robilliard for their technical support in the field. This project received the IRB certification of J-Pal Europe (CE/2014-005). All remaining errors are ours.

In developing countries, and especially in sub-Saharan Africa, social norms of redistribution are particularly prevalent. Individuals frequently transfer a substantial share of their income to members of their social networks, i.e. members of the household or extended family, friends, and neighbors, (Baland et al., 2015; di Falco and Bulte, 2011). This informal redistribution shape the social and economic lives of individuals: people make resource-allocation choices accounting not only for their personal socioeconomic condition but also for the situation of members of their social networks (Platteau, 2000, 2006, 2014).

The economic literature has long focused on the risk-sharing dimension of informal redistribution in economies where people have limited access to financial markets and to formal redistribution, and are structurally vulnerable to income shocks.[1] Informal insurance mechanisms help people protect against certain risks, in particular idiosyncratic ones, although full risk-sharing is almost never achieved due to moral hazard and limited commitment issues (e.g., Coate and Ravallion, 1993; Dercon and Krishnan, 2000; Fafchamps, 1992; Kimball, 1988). However, interpersonal transfers are also linked to other motives, according to anthropological and sociological literature: they can be driven by traditions, social prestige seeking , pure altruism, or well-internalized norms (e.g. Wright, 1994).

The potential adverse effects of this informal redistribution have found a growing recent interest in the economic literature. Akin to a taxation system, informal redistribution can lead to distortions in economic decisions. This kin tax can induce direct disincentive effects on resource accumulation decisions, such as labor supply or investment (Grimm et al., 2013; Hadness et al., 2013), and indirect distortions in resource allocation choices (Baland et al., 2011; Boltz, 2015; di Falco and Bulte, 2011; Goldberg, 2013). The latter studies describe the resource-allocation strategies people adopt to escape the pressure to redistribute, often at a high cost: namely favoring non-easily-sharable assets, hasting some expenses, and hiding income sources and easily-shared resources.

In this paper, we aim to measure the individual cost[2] of social pressure to re-

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

[2] We refer here to *gross* costs. Our paper does not allow for a net welfare analysis, as we are not able to measure the potential benefits from this informal redistribution in this analysis, such as the potential scope for informal insurance as stressed above. Including this dimension in the

distribute. We hence tackle the three subsequent questions. First, who is trying to escape these social obligations to redistribute, and how much do they value being able to relax these obligations? Second, how does it change people's resource allocation choices when they are offered the opportunity to escape this redistributive pressure? Third, from whom are people hiding, their household members, their kin outside the household, or their neighbors? To answer these questions, we conducted an experiment in Senegal that uniquely combines a randomized controlled trial (RCT) and a lab experiment. We elicit preferences for income privacy in a lab setting for a random sample of participants, and a week later, we measure the effect of hidden income on resource allocation choices made outside the lab.

Only a few papers in the economic literature have attempted to identify the distortive role of social norms of redistribution on resource allocation decisions in a controlled experiment. Jakiela and Ozier (2015), using windfall income, explored how observability among volunteering participants from the same community in rural Kenya affects investment choices within the lab, and they show that women with kin participating in the experiment were willing to hide more. However, the paper does not look at how income observability affects non-investment allocation choices out of the lab and the experiment suffers from self-selection of the pool of participants and observers in the lab. Hadness et al. (2013) investigate on a small sample of tailors in Burkina-Faso the effort level they provide depending on whether their prospective income, earned following a lucrative job opportunity offered by the experimenters, was public information to their solidarity network or not. Finally, Beekman et al. (2015) in rural Liberia show that individuals with more kin in the community are more likely to hide a share of their gains, based on a lab-in-field experiment. However, they only elicit the WTP to hide on a subset of participants[3] and do not relate it to investment or allocation decisions. Our work also relates to the literature on intrahousehold non-cooperative behaviors that underlines a propensity to hide resources *within* the household, notably Castilla and Walker (2012, 2013) in Ghana and Ashraf (2009) in the Philippines.

analysis is a necessary future step and is part of our research agenda.

[3]In each household, the head or a spouse participated, depending on the decision made par the selected household.

Inspired by the pioneer experiments mentioned above, our main contribution to the literature is to estimate the effect of redistributive pressure on real-life resource allocation decisions[4] and to relate this effect to the individual willingness-to-pay to escape informal redistribution. Specifically, we contribute to the literature in four dimensions. First, we elicit the willingness-to-pay to hide income for all participants, not just for subjects in a specific treatment group. Preferences are elicited through choices incentivized by a subsequent lottery offering the opportunity to keep part of their lottery gains unobserved from other participants. This enables us to estimate the deadweight loss associated with redistributive pressure for the whole sample and to test whether the effect of getting the opportunity to hide is heterogeneous in *ex ante* preferences for privacy. Second, we estimate the impact of the redistributive pressure on real-life decisions. For this, we rely on the specific feature of our setting, which associates an RCT with a lab experiment. We thus do not impose any structure of transfer or investment decisions in the lab setting and rather leave the participants free to choose how to allocate their gains outside the lab. One week later, we observe resource-allocation decisions out of the lab, for all participants, with an attrition rate below 3%. Third, thanks to the random selection of participants at baseline, we have an exogenous pool of participants, and thus of observers. In contrast to most lab experiments in the field, which are based on voluntary participation, our baseline survey enables us to control for the relatively low attrition between the selection and the lab phase. Fourth, we build on the growing literature of family economics aimed at analyzing economic decisions within the extended family. Specifically, we draw a link between the literature on intrahousehold non-cooperative behavior and the literature on the role of redistribution beyond the household, within social networks. In our setting, we distinguish between transfers made to individuals within or outside the household and we exogenously selected either one or two participants per household in the baseline. This enables us to identify the extent to which the overall results are affected by redistribution between household members or across households.

We conducted the lab-in-the-field experiment in May and June 2014 in poor, densely populated urban communities in the Dakar region, in Senegal on a final

[4] A limitation of our analysis is that we study the allocation of windfall gains. However, an important result of our paper is that these windfall gains are found not to be allocated differently than other sources of income, i.e. lottery gains are fungible.

sample of 797 individuals. First, we find a high willingness-to-pay to escape social obligations to redistribute among participants: 65% prefer to receive their gains in private rather than in public, and they are ready to forgo on average 14% of their unobserved income for privacy. Second, we show that the willingness-to-pay to hide income is positively correlated with proxies for redistributive pressure, proxies that differ across gender: women hide more the stronger their position in their extended family, while men hide more the better off they are. Third, we find evidence of strong distortions in resource allocation decisions outside the lab due to the redistributive pressure, relying on the RCT component. Among people fearing redistributive pressure, the ones who get the opportunity to escape it, through income hiding, transfer 27% less to kin than the ones who get everything in public. They spend this extra money on healthcare and private goods (e.g. personal care, clothing). Women in poor households invest less of their income when they are able and willing to hide, suggesting that investment is a substitute strategy to gain more control over their resources and to transfer less.

The question of the adverse effects of redistributive obligations is not specific to Senegal. Platteau (2014) provides numerous references from the sociological and anthropological literature describing the prevalence of redistributive norms and of coping strategies — the strategy we analyze being one of the most widespread — throughout Africa and more largely in all lineage-based societies.

Finally, by analyzing the linkages between social networks and resource allocation decisions in economies with prevalent redistributive norms and limited access to formal financial markets, our paper highlights possible causes of poverty traps in Sub-Saharan Africa. We point to the existence of large distortions induced by redistributive pressure. Helping people gain more control over their own resources appears crucial for avoiding such deadweight loss. Our study provides strong evidence on how informal institutions shape economic behaviors, in the absence of formal financial markets and public redistribution. Our results, and the new avenues for research they prompt, are all the more important because people most affected by these informal arrangements appear to be the most vulnerable.

The remainder of this paper is organized as follows: Section 1 presents the

experiment protocol, and Section 2 describes the experiment sample. In Section 3, we present the results for the estimation of the cost of informal redistribution, through the elicited willingness-to-pay for income unobservability. We discuss the results on the determinants of the willingness to pay in Section 4. The central results of the impact of income hiding on resource allocation outside the lab are presented in Section 5. Section 6 explores heterogeneity across wealth and gender. Section 7 concludes.

1 Experiment Protocol

1.1 General setting

We conducted our experiment in May and June 2014, in seven different poor urban communities in the department of Pikine, in Senegal's Dakar region.[5] We illustrate the different steps of the experiment in Figure 1 in the Online Appendix. The experiment lasted approximately two weeks in each community. The first week, we selected the sample and administered the household and individual baseline questionnaires. The lab took place on the Sunday of the same week. One week later, the enumerators went back to administer a short follow-up questionnaire to the subjects.

1.2 *Pre-lab* sample selection

The baseline sample consisted of 947 individuals selected using a random-walk sampling method.[6] A household was selected if at least two members satisfied the eligibility criteria: being between 18 and 60 years old and having ever earned some labor income.[7] Once these criteria were verified, the enumerator could start the household survey and proceed to the random selection of the

[5] We selected the communities enough apart so as to prevent any learning or overlap in subject populations.

[6] Each enumerator was assigned one or two blocks of dwellings and a starting point; he or she had to follow a strict rule: only every other dwelling was preselected. If this dwelling had only one floor, and if more than one household was living there, the enumerator would move on to the household to the right of the entrance of the pre-selected dwelling. If a dwelling had several floors, first the floor was randomly selected and then, the right-hand-side household rule was followed.

[7] These two criteria were added to ensure that people were accustomed to managing some resources and to make resource-allocation decisions. If these selection criteria were not satisfied, the enumerator left the dwelling and resumed the random-walk procedure.

player from among the pool of eligible household members. In order 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 randomly varying the number of individuals selected per household: in every second household, only one player was selected, while two players were selected in the next household.[8] This enabled us to introduce some exogenous variation in the intrahousehold pressure for redistribution.

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

1.3 Lab experiment 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.[9] In each community, there were four sessions, at 9 a.m., 11 a.m., 1 p.m. and 3 p.m. Players surveyed by the same enumerators, and therefore, from the same or nearby dwelling blocks were assigned to the same sessions. On average 30 players were invited to the same session. Again, the players were not yet aware of the lottery amounts.

Each session was split into three stages (see Point 2 in Figure 1 in the Online Appendix). First, all participants from the same session were gathered in the same large room, and could observe each other. At this stage, they learned

[8] As indicated above, to be eligible, a household had to contain at least two eligible members so that one-player households and two-player households are comparable.

[9] Subjects had to walk five to ten minutes to get to the school.

that they could gain at least 1000 CFA francs (FCFA) and up to 9000 FCFA if they agreed to pursue the interview with us. To put these amounts in context, in this sample, 527 FCFA is the average daily per capita food expenditure and the average household comprises 11 members.[10] Second, subjects who agreed to stay were invited one by one for a private interview in one of eight small rooms, based on the order of subjects' arrival at the lab session. They were asked to make a set of choices between private and public gains in order to to reveal their preference for income unobservability. The subsequent lottery made these choices incentive-compatible, since the choices were definitive and could potentially determine the outcome of the lottery.[11] Third, after all private interviews took place, all subjects were gathered again in a large room, where all public payoffs were declared and distributed in front of all participants.

Each private interview was composed of three main steps (see Point 3 in Figure 1 in the Online Appendix). The first part is devoted to questions on identifying other participants at the session he or she knows and what his or her relationships are with those people. The second step concerns the elicitation of preferences for private income. Third, the lottery takes place, implementing potentially previous choices. If the drawn card entailed some private gains, the enumerators gave them to the participant during the private interview so as to ensure unobservability by other participants. We describe in details the last two steps in the subsequent two subsections.

Elicitation of preferences for income unobservability

The enumerator explained the rules of the lottery game, reading first the "consent",[12] in French or in Wolof, the dominant local language.[13] Just before the elicitation of the player's preference for income unobservability, he or she was shown all the potential cards he or she could draw from the lottery box (Point

[10]The average per capita food expenditure for one day in the department of Pikine is 465 FCFA, and the average household size is 13, according to the "Poverty and Family Structure" survey, a nationally representative survey of Senegal collected in 2006 (DeVreyer et al., 2008). Thus we selected slightly richer-than-average households or communities.

[11]Participants are told that if they choose not to continue to participate, they would receive 500 FCFA publicly at the end of the session.

[12]The French and Wolof consents are available upon request.

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

4 in Figure 1). The participant learned that no matter her and his choices in the preferences' elicitation and the draw in the lottery, he or she would receive at least 1000 FCFA in public. The player was also told that he or she may receive more in public or in private. The enumerator carefully explained each card, especially the two types of cards: the "option cards" and the "no-option cards". The gains associated with the latter were independent of the participant's preferences: each of the three cards specifies receiving respectively 1000 FCFA in public and nothing in private, 9000 FCFA in public and nothing in private, or 1000 FCFA in public and 8000 FCFA in private. Conversely, the gains associated with the "option cards" would follow the choices participants were about to make about their preferences for income privacy. The no-option with only 1000 FCFA in public and nothing in private is crucial in the design because it made impossible any inference about who chose to hide: everybody knew that some "unlucky" people got 1000 FCFA in public and nothing in private, regardless of their preferences for income unobservability. This card thus protected the privacy of participants' choices — about income privacy. Enumerators took care to make this point clear; however, had a participant not understood this, we would bias his or her willingness-to-pay to hide downward, since she or he would not pay for the privacy.

To elicit preferences for income unobservability, we relied on a multiple-choice-list method. Each subject was asked to make a series of choices illustrated by the option cards. The various choices are shown in Table 1. Each card presented two options: 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, the price of the income-hiding option, equals either 0, 200, 500, 700 or 1000 FCFA; the payoffs for option B amount to 9000 FCFA minus p. Each choice, i.e. for each value of p, was offered one after the other, in ascending order, until reaching 1000 FCFA, no matter what the previous answer was. The enumerator made clear that some of these cards were in the ballot box, meaning that each choice the subject made would potentially be implemented after the lottery.[14] For subjects showing multiple switches, the enumerators

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

re-explained the questions and the stakes of the choices; if they changed their initial choices, the revised choices in addition to the initial ones were recorded. Choosing A for the first choice when $p = 0$ indicated a strong preference for income *observability*. For subjects ready to pay up to 1000 FCFA to get only 1000 FCFA in public, the enumerator asked the maximum amount the player was ready to forgo in order to get the minimum in public.

Table 1: Elicitation of preference for income unobservability: "option cards"

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

Lottery and payoffs distribution

After the participant made all his or her choices, the enumerator explained again that all no-option cards and *some* of the option cards were in the lottery box, and if drawn, the player's decisions will be implemented. For budget and power constraints, only two "option cards" were actually put in the box, the ones with $p = 200$ and $p = 700$. However, this information was not revealed to subjects: the enumerators only told them that some of the option cards were in the lottery box. The different cards included in the ballot box are presented in Table 2. Participants did not know about the actual distribution of cards, so they could not infer how many people had actually chosen to hide when the public payoffs were distributed.

The *ex ante* distribution of cards in the lottery box was fixed: in each session, there were five no-option cards with 1000 FCFA in public, seven no-option cards with 9000 FCFA in public, eight no-option cards with 1000 FCFA in public and 8000 FCFA in private, nine option cards with the hiding price p set at 200 FCFA, and eight option cards with the hiding price p set at 700 FCFA.[15]

[15]However, since participation varied from one location to another and from one session

Table 2: Cards in the ballot box and their associated payoffs

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 $\approx$ 1.5 EUR.
"*O*" stands for option card (i.e., based on the choices made *ex ante*) and "*NO*" stands 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 $p700$ (200 and 700 FCFA, respectively) or at no cost, $free$, and independently of the previous choices. A *Public* card gives all the gains in public.
Low refers to small gains, 1000 FCFA. *High* refers to high gains, 9000 FCFA. All *Private* cards are high gains.

Once everything was explained and understood, the subject drew a card from the lottery box. If it was an option card, the enumerator recalled the subject's previous choice and asked the subject whether he or she still agreed with his or her previous choice, indicating that the alternative was receiving 500 FCFA in public. The private gains were distributed in the private room in a separate envelope. A ticket was given to the subject stating the amount he/she would receive in public, either 1000 FCFA or 9000 FCFA. By design, all participants received at least 1000 FCFA in public.

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 or their choices out of the lab. After the private interview, subjects were then invited to wait in a separate large room until everyone had finished.[16] Once each interviewee had played, the public gains were disclosed to the assembly and distributed publicly.

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 the private interviews took place simultaneously in eight rooms, the 37 cards were distributed randomly in eight small lottery boxes in front of all participants when they were all gathered in room prior to the private interviews.

[16] On average, a session lasted one and a half hour, with a maximum of two hours.

1.4 *Post*-lab survey

A novel feature of our experiment design is that we did not force any in-the-lab transfers. In order to measure the impact of the observability of personal gains by other participants on transfers and resource-allocation decisions, we analyzed spending decisions made outside 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 an open question about how they allocated the payoffs of the gains.[17] We made sure we identify the recipient of transfers made by the participant, in particular if the former was a household member, a kin or a non-kin.

2 Experiment Sample

2.1 Sample description

Table 8 in the Appendix describes the sample of individuals that attended the experiment phase (thereafter, the "lottery sample"), and tests whether baseline characteristics are balanced across the cards giving the opportunity to hide, "private cards", and cards with no opportunity to hide "public cards".

In the sample, two-thirds of the players were women.[18] The average age was 37 years. Household heads accounted for 20% of the sample, while spouses and children of the head represented each a quarter of the distribution. Two-thirds of the subjects were married, including 18% in a polygynous union. One-fifth of the sample had no education and 40% contributed to the food expenditures of their households. The informal sector represented 86% of the last or current jobs held. Overall, most variables were not significantly different accross groups, but some differences remained – ethnicity, marital status, having a responsability in the community, and risk aversion – that we control for in the subsequent

[17] Enumerators wrote the answer to this question literally; the answer was coded only after the survey. Special attention was paid to not influencing any answer from the respondent and to making sure each answer was correctly coded.

[18] Great care was given to including both men and women in the sample. This is why 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.

empirical analysis.

2.2 Distribution of treatment and control groups

Table 9 in the Appendix presents the final distribution of drawn cards: 352 of 797 subjects, i.e. 44.2%, received a share of their payoffs 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 (respectively $p = 700$ FCFA) had expressed a willingness-to-pay larger than 200 FCFA (respectively 700 FCFA) in 57% of the cases (respectively, 49%), which means that they accepted to hide at this price (see Table 10). We observe only a very slight decrease in the demand for income unobservability between the two price levels.

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

Table 14 in the Online Appendix describes the attrition between the baseline and the lottery sample. The attrition rate is 13%. Individuals who did not come to the lottery lived in smaller and richer households (in terms of daily food expenditure), with a relatively larger share of adult members. They were more likely to be single men who were not selected with another member of the household.[20] They were more educated, more likely to work in the formal sector. We account for these differences throughout the rest of the analysis.

2.4 Attrition between the lab phase and post-lab interview

Attrition between the lab phase 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 out of the Dakar region the

[19] In Table 9, we removed 19 inconsistent observations, in terms of preferences. These observations are also dropped in the subsequent tables and analyses.

[20] Part of this attrition among pairs comes 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.

week after the lab phase and not reachable for a face-to-face interview. Table 15 in the Online Appendix compares the characteristics of the attrited players (column 2) and the non-attrited ones (column 3). The two groups are similar. Players who earned only 1000 FCFA publicly were, however, less likely to be reinterviewed.[21]

3 Estimation of the cost of informal redistribution

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 you 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 individuals with very high preferences for income unobservability.[22]

Statistics of the elicited WTP to hide income in the lab are shown in Table 3. [23] The first three columns of the table present the results for the whole sample, while we condition the sample on the participants who showed a positive or null WTP to hide in the last 3 columns. For both samples considered, we distinguish between men and women. The rationale for this is that women and men have generally separate social networks, they do not interact within the same groups, the pressure to redistribute may thus also come from different groups.[24] We also find it interesting to ponder whether these measures are different among worse-

[21] This is not worrisome to our study since as mentioned above, this group mainly served in the lab phase to protect people choosing to keep a share of their income unobservable from being identified as doing so by other participants.

[22] 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.

[23] The full distribution of the WTP to hide is shown in Figure 2 in the Online Appendix for the individuals with a positive WTP to hide income. Note a WTP equal to 0 on the graph means that the individual prefers hidden income over public income when the choice is free; however he or she is not ready to pay 200 FCFA or more.

[24] For qualitative evidence in Senegal, see (Guerin, 2008) and (Moya, 2004); for quantitative evidence in Madagascar and Ghana, see Nordman and Vaillant (2014) and Castilla and Walker (2013) respectively.

Table 3: Measures of the willingness-to-pay (WTP) to hide income

	Whole sample			**Sample with WTP $\geq$ 0**		
	All players (1)	Women (2)	Men (3)	All players (4)	Women (5)	Men (6)
Panel A: whole sample						
Number of observations	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
Panel B: $<$ median of household daily food expenditures per cap.						
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
Relative WTP†	2.28	2.14	2.52	3.54	3.34	3.97
Panel C: $\geq$ median of household daily food expenditures per cap.						
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
Relative WTP†	1.18	1.12	1.34	1.80	1.72	1.97
Test difference in relative WTP - Panels B vs C (P-Val)	0.00	0.00	0.00	0.00	0.00	0.00

1000 FCFA $\simeq$ 1.5 EUR $\simeq$ 1.7 USD
Taking a conservative approach, the WTP 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 median daily household food expenditure per capita is 420 FCFA.
† Relative WTP corresponds to the ratio of the WTP to hide income to the household daily food expenditures per capita.
The difference of the average WTP between men and women is significant at a 5% level.

off and better-off individuals; in other words, do more financially constrained individuals face different levels of redistributive pressure? Panels B and C in Table 3 show the WTP statistics for individuals below and above the median of household daily food expenditures per capita.

The average WTP to hide is 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 600 FCFA for the whole sample, 500 FCFA for women and 1000 FCFA for men. Sixty-five percent of players were willing to hide at a zero price; this rate is similar for men and women. Conditional on a positive WTP to hide, half of the sample of both men and women was ready to pay up to 1000 FCFA to have only 1000 FCFA in public and the remainder in private. On average, the WTP is 1089 FCFA, i.e. 13.6% of the gains that could be hidden, this share being smaller for women (11.8%) than for men (16.1%). Assuming that preference for income unobservability reflects the implicit tax

rate people will face on their observable revenues, the observed WTP is really high.

Moreover, Panels B and C show that men whose daily food consumption is above the median are willing to pay more than those below the median. In contrast, women below and above the median have exactly the same WTP to hide, at both the mean and the median.

Going one step further, we provide an additional measure of the redistributive pressure by reporting the relative WTP computed as the ratio of the WTP to the household daily food expenditure. Looking at Panels B and C, we see that individuals living in poorer households reveal levels of WTP that are twice as large as those living in richer households, in both men and women samples. Hence, the redistributive tax rate appears strongly regressive, poorer individuals facing a relatively higher redistributive burden.[25]

4 Who is willing to hide? The determinants of the WTP to hide income

4.1 Empirical strategy

We estimate the determinants to the WTP to hide, using as a dependent variable the maximum price people declared to be willing to pay to have revenue partly unobservable. However, we observe only the *interval* in which this maximum price lies, for individuals with a WTP to hide smaller than 1000 FCFA.[26] Therefore, we run an interval-censored-data regression model,[27] where the dependent variable is the price intervals implied by each question in the experiment[28]:

[25] This relationship is also verified when looking at all percentiles of daily food expenditures, see Figure 3 in the Online Appendix.

[26] Individuals with a WTP to hide income larger than 1000 FCFA were asked to state the 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.

[27] 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.

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

$]-\infty;0[;[0;200[;[200;500[;[500;700[;[700;1000]$, for individuals with a WTP below 1000 FCFA and their true WTP otherwise. Let $p = X'\beta + \varepsilon_i$ 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 $\varepsilon \sim \mathcal{N}(0, \sigma^2 I)$. For observations i whose price $p_i \leq 1000$, p_i is observed in intervals, i.e., we know only 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 dependent variable is a dummy equal to 1 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 Section 6, 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 Experimental variations in the pool of observers of the gains

Table 4 presents the estimation results of the effect of the exogenous experimental variations of the group composition on the WTP to hide income.[29] 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.

[29]The composition of the group of participants is exogenous by design of the experiment since the participants were selected randomly. However, individuals with more kin living in the community may end up with a higher probability to have any kin in the same session. Nevertheless, conditional on having any kin in the neighborhood at baseline, having a kin attending the session is exogenous. Thus, we control for the former variable of the baseline in the subsequent analysis.

Table 4: 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	191.6*		
	(105.4)		
Selected in household pair	−20.2	−122.8	90.8
	(111.8)	(120.6)	(215.6)
Any known non-kin in the session	−14.6	−93.6	87.9
	(148.5)	(130.9)	(331.3)
Any kin in the session (excl. household pairs)	285.0**	450.8***	−227.1
	(131.7)	(133.3)	(306.7)
Mean of the WTP to hide (in FCFA)	732.4	651.2	902.7
Number of observations	771	524	247
AIC	7514.2	4916.9	2593.8
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	−0.057
	(0.039)	(0.045)	(0.071)
Any known non-kin in the session	0.027	−0.018	0.130+
	(0.042)	(0.058)	(0.080)
Any kin in the session (excl. household pairs).	0.106*	0.190***	−0.059
	(0.057)	(0.059)	(0.085)
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; [†] Dependent 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: complete set of controls shown in Tables 17 and 18 for respectively the interval-censored and the logit estimations.

Looking at the interval-censored model, in Panel A of Table 4, coefficients represent the additional price people are willing to pay. We find that men are willing to pay on average 192 FCFA 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. Therefore, we focus hereafter on the discussion about these two specifications. A first remark is that the effect of being selected along with another household member is never significant, for either men or women.

For men, we find no significant effect from the experimental variations of the group composition of a lab session on the maximum price they were willing to pay (Panel A of Table 4). However, in Panel B, we find that at the extensive margin, men were more likely to be willing to hide when there was at least one known non-kin in the same session: this increased their probability to hide by 13 percentage points (although the effect is only significant at 12%). This suggests 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) significantly increased the WTP to hide income. Given our experimental design, a kin who attended the same session lives in the same community but does not belong to the player's household. Hence, having at least one non-household-member kin attending the lab increased the WTP by 450 FCFA for women, whereas having a household member participating in the session had no significant impact, though the sign is negative. In Panel B, we also find for women that the presence of at least one kin in the same session increased the probability to be willing to hide income by 19 percentage points.

In Table 18 in Online Appendix C, we explore the heterogeneity of this effect 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.[30] The presence of a non-household member kin in the session increases the willingness to pay to hide for women

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

below and above the median of household food consumption of a close amount (respectively, + 406 and + 380 FCFA).

4.3 Other determinants

Tables 17 and 18 in the Online Appendix C present the results for all the covariates of the interval-censored data model respectively on the whole sample and on the subsamples (except men) below and above the median household food consumption. Results of the logit estimation for all covariates are presented in Table 19 in Online Appendix C; they are similar to the previous model and are not further discussed here.

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 17, column (1w)). Besides the experimental variation variables we already mentioned, 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 labor income is positively correlated with the WTP to hide. These two last effects are driven by the sample of women from poorer households (see column (1w) in Table 18). 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 462 FCFA. This implies that the result on earnings explained above is mainly driven by women working in the informal sector for whom earnings are more instable and less visible and therefore hiding their income can be a strategy for smoothing 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 435 FCFA and 274 FCFA, respectively. The only negative and significant variable in Table 17 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.

Determinants of the WTP to hide income for men fall into two broad dimensions: on the one hand, characteristics related to the economic position, — a better economic position is correlated with a higher WTP—, and on the other hand, having a good social position in the community correlates with a *lower* WTP. Regarding the social dimension, holding a responsibility in the community[31] induces a WTP 1316 FCFA lower. Men choosing a responsibility within the community level have either a higher preference for redistribution or a higher internalized redistributive duty. Alternatively, they may fear less being observed possibly because they have more control over their resources or access to alternative strategies allowing them to avoid taxation. Looking at proxies for economic status, we see that being single or being the child of the household head, i.e., being financially responsible for fewer people, encourages men to increase their WTP to hide income by 528 FCFA and 399 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 422 FCFA: this suggests that poorer men are less ready to forgo some money to keep income unobservable.

5 The impact of income hiding on resource-allocation decisions

In this section we estimate the distortions in resource allocation choices induced by redistributive obligations. To do so, we test whether individuals with a share of hidden gains are making different real-life choices of consumption or transfers than the ones with observable gains.

[31] Among individuals who have a responsibility within the community, 21% are responsible for a "tontine" (ROSCAS) (women : 39%, men 0%), 35% are responsible of an association, other than a tontine (women : 25%, men : 48%), and 44% have another kind of responsibility (women : 36%, men 52%).

5.1 Empirical model and identification strategy

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

$$Y_{ig} = \alpha + \beta \; PrivateCard_i \; + X'_{ig} \; \gamma + \mu_c + \mu_s + u_{ig} \tag{5.1}$$

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 below the outcomes below). 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 regardless 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 cards is 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_{ig} is a set of controls including sociodemographic 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.[32] 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 his or her network. If the WTP to hide income is positively correlated to this redistribution pressure, the effect of the "private card" should be driven by the subsample of participants with preferences for privacy. We therefore estimate equation (5.1) on the subsamples of individuals with positive WTP to hide income and of individuals with no or negative

[32] The full set of controls is listed in Table 5.

WTP to hide income.[33] We further test for heterogeneity in the impact of the opportunity to hide across the two groups of WTP (positive or strictly negative) by interacting the variable *PrivateCard* with a dummy taking 1 when the individual has a positive WTP to hide income. Thus, we estimating the following equation:

$$\begin{aligned} Y_{ig} = \alpha + \beta_1 \, PrivateCard_i \; + \beta_2 \, \mathbb{1}_{(WTP \geq 0)i} \\ + \beta_3 \, PrivateCard_i * \mathbb{1}_{(WTP \geq 0)i} \; + X'_{ig}\gamma + \mu_c + \mu_s + \varepsilon_{ig} \end{aligned} \tag{5.2}$$

where $\mathbb{1}_{(WTP \geq 0)}$ is a dummy variable that takes 1 when the player has a positive WTP 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 negative preferences for income hiding. In this specification, the coefficient above the interaction term is the parameter of interest and tests the difference of the effect of the opportunity to hide between subjects with positive and negative preferences for income hiding.

Identification

Identification of the effect of the *PrivateCard* in model (5.1) 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 subsamples of individuals with positive and negative WTP to hide and of model (5.2), 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 20 in Appendix D shows that the probability to draw a card allowing to hide gains is not correlated with preference for hiding income, regardless of the inclusion of community, session, or enumerator fixed effects.

[33] Table 22 in Online Appendix D 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 value) of the opportunity to hide on transfers to kin is globally increasing between a WTP to hide at 0 and at 700 FCFA, though the coefficient decreases slightly between 0 and 200 FCFA. However, globally the different coefficients are not statistically different from each other. We observe a similar pattern on the personal expenditures. Therefore, for the sake of simplicity, we focus on the dichotomy between negative and positive WTP to hide income in the remaining results, which guarantees also the largest samples.

In all specifications, we exclude individuals who got only 1000 FCFA in public and nothing in private; 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 WTP to hide income is positive. We thus assume here that the *shares* of the lottery gains allocated to the various commodities are not directly affected by the windfall-income-level differences — at most 700 FCFA– - but are directly affected by preferences for hidden income and the random opportunity to hide. We test for this assumption in Section 5.3.1 by restricting the analysis to the subsample of subjects who randomly won exactly 9000 FCFA.

Outcome variables: lottery-gains allocation choices

We define eight types of commodities. Private goods encompass personal expenses that exclusively concern the lottery winner, such as personal care or clothes. Health expenditures account for all health expenditures made by the individual — both for himself/herself or for someone else. We also consider expenditures that benefit part or all of the household, distinguishing between food expenses — contribution to the usual food pot or purchase of some extras, e.g., candies, fruits, juices– and nonfood expenses — e.g., electricity bill and detergent. Transfers are defined as money given by the lottery winner to another individual with nothing directly or explicitly expected in return. We separate transfers made to kin and non-kin; among the kin, we include transfers both within the household and to kin outside the household. In Section 6, we refine this definition and explore the differences between transfers to kin within and outside the household . Productive 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 homemade preparations that they will sell on the street or in the market. Finally, saved gains and other expenses correspond to gains that are not used yet, those used to repaid loans and other expenses that we were not able to categorized.

5.2 Main results

Table 5 presents the results of the impact of income hiding on resource-allocation choices for all participants.[34] In Panel A, we show the results of model (5.1) 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 subsample of individuals with positive WTP to hide for Panel B and with negative WTP to hide for Panel C. In Panel D, we estimate model (5.2), showing only the interaction term. Lastly, 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.

Looking first at the unconditional means in Panel E, we observe that household food expenditures and transfers to kin account for the two largest shares of expenses of the lottery gains: they represent respectively 26.6% and 21% of gains for people with public cards (i.e., respectively 2385 and 1980 FCFA out of 9000 FCFA). Transfers to non-kin are marginal in comparison. Hence, resources clearly appear to be redistributed within one's kinship networks and only rarely beyond. Personal expenditures, and non-food household expenditures each account for around one-tenth of the gains, while 17% of them are assigned to productive investments. Public card winners spend almost 62% of their gains on household expenses or on transfers. Comparing public card winners with a positive and negative WTP, we find that public card winners with a positive WTP to hide spend 11 percentage points more of their gains on transfers to kin than individuals with the same card but negative WTP to hide. This result reinforces the relevance of our measure of the WTP to hide: individuals with a positive WTP are also those more subject to informal taxation.

5.2.1 Transfers

The central finding 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 prefer income privacy. Indeed,

[34] Table 21 in the Appendix shows the same results without any control, with only community and session fixed effects.

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

Dependant variables:	Private	Health	Household		**Transfers to**		Productive	Saved gains
Commodity shares	Goods	Care	Food	Non-food	Kin	Non-kin	Investment	& Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A (N=654): Whole sample								
Card with opportunity to hide	3.870	1.313	−0.748	−1.448	−2.714	0.432	−1.730	0.377
	(2.092)	(1.325)	(3.028)	(2.145)	(2.263)	(0.972)	(2.716)	(1.475)
R^2	0.11	0.05	0.12	0.06	0.10	0.06	0.10	0.04
Chi-2 (p-value)	0.00	0.40	0.00	0.03	0.00	0.15	0.00	0.57
Panel B (N=433): WTP to hide$^{\dagger} \geq 0$								
Card with opportunity to hide	5.188	2.912	1.407	−3.412	−6.560	1.413	−2.808	0.310
	(2.689)	(1.564)	(3.625)	(2.577)	(2.780)	(1.268)	(3.373)	(1.831)
R^2	0.12	0.07	0.17	0.07	0.13	0.07	0.13	0.06
Chi-2 (p-value)	0.00	0.36	0.00	0.29	0.00	0.23	0.00	0.37
Panel C (N=221): WTP to hide$^{\dagger} < 0$								
Card with opportunity to hide	2.998	−0.586	−5.211	1.080	5.138	−1.563	0.568	−0.854
	(3.465)	(2.558)	(5.630)	(3.978)	(3.942)	(1.514)	(4.709)	(2.547)
R^2	0.16	0.11	0.13	0.16	0.20	0.15	0.18	0.13
Chi-2 (p-value)	0.05	0.65	0.19	0.04	0.00	0.14	0.01	0.22
Panel D (N=654): Testing heterogeneity across WTP to hide†								
Card opportunity to hide × WTP to hide $\geq 0^{\ddagger}$	4.008	3.776	4.391	−4.568	−10.711	2.566	−2.635	0.084
	(4.428)	(2.803)	(6.414)	(4.545)	(4.790)	(2.054)	(5.758)	(3.127)
R^2	0.11	0.05	0.12	0.06	0.10	0.06	0.10	0.04
Chi-2 (p-value)	0.00	0.40	0.00	0.04	0.00	0.16	0.00	0.67
Panel E: Unconditional means								
Public cards (N=164)	10.754	2.724	26.445	11.495	20.7	3.144	17.344	5.599
Public cards & WTP >=0 (N=104)	10.989	1.784	24.047	12.042	24.713	2.556	17.361	5.599
Public cards & WTP <0 (N=60)	10.347	4.352	30.601	10.548	13.742	4.164	17.314	5.599

S.e. in (). 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).
‡ Panel D controls for main effects: WTP to hide and card with opportunity to hide lottery gains. The significant interaction term for transfers to kin is identified on the reference group of 29 individuals who did not get the card with the opportunity to hide, were not willing to hide *and* did send transfers to kin.
Dependant variables: 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 Panels A to D: sex, age, has any kin in neighborhood (baseline), selected with another household member (baseline), household head, spouse of household head, child of household head, religion, ethnicity, any Koranic education, any French or Arabic education, marital status, household size, share of household members below 15 and above 60 years old, sector of activity, formal or informal salaried worker (i.e. not self-employed), average income over last 3 months (in log), contributes to household food expenditures, household food expenditures per day per capita (in log).
Additional control variables in col. (2): suffers from an illness in baseline, amount of health care expenditures spent in the 7 days before the baseline (in log). Col. (5): has any kin the lab session (excl. household pair). Col. (6): holds a responsibility in the community.
Community and time of sessions fixed effects included in all panels and for all outcomes.

we estimate a large decrease of 6.6 percentage points of total gains dedicated to transfers to kin, significant at 5%, for individuals with a positive WTP to hide in Panel B. No significant effect on transfers is found for the whole sample in Panel A, and for individuals with a negative WTP to hide in Panel C, the sign being even positive.[35] For Panel B, this represents a decrease of 594 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 difference in the effect of the opportunity to hide between the individuals with positive and nonpositive WTP to hide is large, –10.7 percentage points, and significant at 5% (Panel D).

[35]The sample of individuals with non positive WTP to hide is rather small, and we lack power for estimating significant *positive* effect on this subsample.

We find no 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 a positive sign.

We can draw three main observations. First, this result shows that the WTP to hide income captures well the willingness to avoid redistributive pressure since the individuals who are willing to pay to hide are also the ones who decrease the transfers when they have the opportunity to do so, and *vice versa*. Second, even among individuals who are willing to hide and who are given the opportunity to do so, we do not observe that they stop transferring totally, in fact they still transfer 18% of their gains, i.e. about 1600 FCFA. This suggests that the social obligations to redistribute people try to circumvent and for which they are ready to pay a high price concern a quarter of the value of transfers (27%). Since the transfers made by people willing to and able to hide exceed by 600 FCFA the observed 1000-FCFA gains, it is suggestive that people maintain certain transfers by pure altruism, or alternatively, as part of repetitive risk-sharing arrangements. Third, it is important to notice that transfers to non-kin are not affected by the opportunity to hide and they represent a share almost ten times lower.

5.2.2 Personal expenditures and other outcomes

Almost symmetrically to the decrease in transfers, the share of the gains devoted to personal expenditures is significantly increased. We found this for the whole sample, the effect being larger in Panel B than in Panel C, though the difference is not significant (Panel D). For Panel B, this effect is 5.2 percentage points, accounting for an increase of 47% in the share of personal expenditures (465 FCFA). We also find weak evidence of an effect of the opportunity to hide for the individuals willing to hide on health[36] that again seems totally driven by individuals with a positive WTP to hide income. Their health expenses are 1.6 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 exogenously allowing people to hide their gains decreases considerably the share dedicated to transfers to kin. This de-

[36]The Chi-2 test has a p-value of 0.36, 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 properly estimate this effect.

crease in transfers allows to free up some resources for private expenditures, and potentially on health. The result on transfers concerns exclusively subjects who show *ex ante* preferences towards income privacy, meaning individuals more subject to redistributive pressure. While the literature has more focused on investment as an outcome (e.g. Jakiela and Ozier, 2015), we find that people first turn to expenditures with more immediate private returns when they are able to decrease the redistributive pressure.

5.3 Alternative mechanisms

The results presented so far are discussed as the causal estimation of distortions due to income observability on resource allocations. We discuss in turn alternative mechanisms and show that they are not driving our results.[37]

5.3.1 Testing the income effect

In the estimated models, we relied on the assumption that the maximum 700 FCFA difference between the subjects who earned 8300 FCFA 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 5 are not driven by this mechanism, we estimate the same equations as previously on the subsample of individuals who randomly drew the card $C_{9000,NP}$ or $T_{free,NP}$. All of these individuals earned 9000 FCFA but some were randomly awarded 8000 FCFA in private while others were not, all regardless 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 6 presents the results, which closely mirror those found in Table 5, in both sign and magnitude. We find that the opportunity to hide decreases by 5.5 percentage points[38], significant at the 10% level

[37] An additional competing story might be an aversion to public attention: whether fear or distaste of being publicly exposed, regardless of their income from the experiment. We think that our experiment does not suffer from this. 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 given at least 1000 FCFA in public even when they received some gains in private

[38] In a less demanding specification –i.e. without control variables, with only community and session fixed effects –, we obtain a coefficient for transfers to kin of -6.6, which is exactly the same as in Table 5. Results are available upon request.

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 –6.6 and significant at the 5% level in Table 5). Looking at the share of the gains dedicated to personal expenditures, we find a positive effect of 5.2 percentage points in Panel B, like in Table 5.From these results, we can conclude that resource allocation in terms of shares is not affected by the small differential in income gains among some participants.

Table 6: Testing the income effect: effect of hidden income among 9000-FCFA-gain winners
Sample of no-option cards: 9000F in public vs 1000F in public & 8000F in private

Dependant variables:	Private	Health	Household		**Transfers to**		Productive	Saved gains
Commodity shares	Goods	Care	Food	Non-food	Kin	Non-kin	Investment	& Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A (N=304): Whole sample								
Card with opportunity to hide	3.632	1.161	−3.447	−0.564	−1.956	0.721	−1.082	0.897
	(2.518)	(1.492)	(3.782)	(2.737)	(2.778)	(1.279)	(3.484)	(1.817)
R^2	0.13	0.07	0.16	0.12	0.18	0.14	0.11	0.11
Chi-2 (p-value)	0.03	0.82	0.00	0.03	0.00	0.01	0.08	0.11
Panel B (N=210): WTP to hide$^{\dagger} \geq 0$								
Card with opportunity to hide	5.226	1.509	−0.747	−2.353	−5.518	1.965	−2.133	0.419
	(3.109)	(1.551)	(4.410)	(3.287)	(3.289)	(1.539)	(4.049)	(2.134)
R^2	0.16	0.10	0.22	0.13	0.27	0.18	0.19	0.13
Chi-2 (p-value)	0.08	0.77	0.00	0.31	0.00	0.02	0.01	0.26
Panel C: Unconditional means								
Public cards (N=164)	10.754	2.724	26.445	11.495	20.7	3.144	17.344	5.599
Public cards & WTP >=0 (N=104)	10.989	1.784	24.047	12.042	24.713	2.556	17.361	5.599
Public cards & WTP <0 (N=60)	10.347	4.352	30.601	10.548	13.742	4.164	17.314	5.599

S.e. in (). Panels A & B: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
Dependant variables: 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: whole sample. Panel B: sample with positive WTP to hide income.
Control variables: see Table 5 for the full list of regressors.
Community and time-of-session fixed effects included in all panels and for all outcomes.

5.3.2 Testing the fungibility of the gains with other income sources

An inherent limitation of our experiment is the nature of the windfall gains, as opposed to effort-based income. True, there is a number of experimental studies showing that people are less generous in dictator games when they first need to earn their income, rather than when they receive a windfall payment (among others, Cappelen et al., 2013; Cherry et al., 2002; Hoffman et al., 1994).

A first answer to this concern is that in this paper, we are not so much interested

in the *level* of redistribution but rather in the *difference* in the level of redistribution between private and public gain earners. Therefore, under the assumption that the pure windfall income effect is the same for private and public gains, the fact that gains are not earned should not bias our results.

Moreover, we test the fungibility between the lottery gains and other income earned by the players. Lottery gains would not be 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.

Table 7: 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	*Nontransfer consumption*	*Transfers to kin*	*Transfers to non-kin*
Panel A (N=667): Whole sample			
Card with opportunity to hide	4.065	−4.409	0.207
	(2.157)	(1.926)	(1.025)
R^2	0.07	0.09	0.04
Chi-2 (p-value)	0.00	0.00	0.44
Panel B (N=438): WTP to hide$^{\dagger} \geq 0$			
Card with opportunity to hide	4.297	−6.076	2.011
	(2.581)	(2.273)	(1.322)
R^2	0.07	0.09	0.06
Chi-2 (p-value)	0.15	0.01	0.56
Panel C (N=229): WTP to hide$^{\dagger} < 0$			
Card with opportunity to hide	3.908	−2.067	−2.748
	(3.954)	(3.490)	(1.645)
R^2	0.16	0.20	0.10
Chi-2 (p-value)	0.02	0.00	0.25
Panel D (N=667): Testing heterogeneity across WTP to hide†			
Card opportunity to hide × WTP to hide $\geq 0^{\ddagger}$	0.804	−4.126	4.306
	(4.530)	(4.041)	(2.150)
R^2	0.07	0.09	0.04
Chi-2 (p-value)	0.00	0.00	0.29
Panel D: Unconditional means			
Public cards (N=164)	78.705	17.516	4.033
Public cards & WTP >=0 (N=104)	78.923	17.803	3.274
Public cards & WTP <0 (N=60)	78.328	17.018	5.348

Dependent 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: 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: whole sample, Panel B: sample with positive WTP to hide income.
Control variables: same as in Table 5.
Community fixed effects included in all panels.

To discard this threat, we rely on our post-lab survey, in which we asked for the labor income earned during the past seven days, but also the amounts for the five largest transfers received and sent during this timeframe.[39] We compute the total earnings perceived over the past seven days by summing the declared labor income, the received transfers, and the lottery gains.[40] We thus compare our main results on the effect of hidden income on the share of lottery gains allocated to transfers to kin and non-kin in Table 5, with the results on the share of total earnings on the same types of transfers[41] in Table 7. If the lottery gains are fully 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.

We find 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 the player to hide income decreases the share allocated to transfers to kin by -6.1 percentage points here in Table 7, versus by -6.6 percentage points in the main Table 5. Results in transfers to non-kin are also close in magnitude but are non-significant. Moreover, the shares allocated to transfers (Panel C) are very similar between the two tables.

This test has strong implications: it suggests that the difference in allocation choices of public and private resource is not affected by the nature of the windfall nature of the gains, since the same pattern is observed for total income.

6 Heterogeneity analysis

Our results relative to the WTP indicate that preferences for income privacy strongly differ along the gender dimension and along the median of household

[39] 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.

[40] For individuals who did not perceive their income in the past seven days (e.g., monthly earned income), we compute it from the baseline survey.

[41] We have the information about only the amounts of the five most important transfers made during those seven days and not about other types of expenditures. Since our main results focus on transfers, we think that this comparison provides a convincing test on the fungibility issue.

food expenditures. Here, we explore how sub-groups, defined along these two dimensions, allocate their resources when given the opportunity to hide income. Also, we consider separately transfers made to individuals within the household and transfers made to kin members in the community to disentangle the effect depending on the strength of family ties.

6.1 Refining transfers within kin networks and wealth heterogeneity

An interesting question to raise is whether the decrease in transfers to kin concerns transfers made to household members or to kin outside the household. In Panel A of Table 12 in the Appendix section, we re-estimated model 5.2 distinguishing transfers to kin within household (column (5)) from transfers to kin outside the household (column (6)).

We also investigate the heterogeneity of the effect at the median household daily food consumption per capita in Panels B and C of the same table. The median is 420 FCFA and the mean daily household food consumption per capita for the sample below the median is 301 FCFA, while for the sample above the median, it is more than the double: 696 FCFA. Hence, for an individual in the lower part of the distribution, the lottery gains represent almost a month of his or her own daily consumption, while for someone above the median, this represents only 13 days. Since the willingness-to-pay to hide income is twice higher in relative terms for poorer individuals, we may thus expect that receiving the gains in public or in private induces differential effects on how people spend their income on these two subsamples. Moreover, in Panels B2 and C2, we restrict the considered samples to the individuals with a positive WTP to hide.

A first observation is that individuals who have a positive WTP and who are given the opportunity to hide actually decrease the share of transfers made to kin *outside* the household and not transfers to household members (Panel A2). This holds true for individuals below the median consumption level (Panel B2), but not for those above it (Panel C2), although the coefficient remains negative. Income privacy enables individuals to re-allocate resources to the benefit of health expenditures for the poorest (Panel B2) and of personal expenditure for the richest (Panel C2). A new result pertains to the investment choice made

by poorest individuals: we find that the investment share is decreased by the opportunity to hide among individuals willing to hide (Panel B2). 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[42]; hence, getting the opportunity to hide make this strategy redundant.

6.2 Gender analysis

Following on these results, we further explore the heterogeneity by gender in Tables 11 and 13 in the Appendix section, for men and women respectively. For women, we also split the sample by household economic position (Panels B and C).[43]

Concerning men, Table 11 shows that in Panel B, men who are willing and able to hide decrease their transfers to kin outside the household by 8.3 percentage points relative to men with the same preferences but who did not get the opportunity to hide. This accounts for a decrease of 88% of the share, meaning that they almost stop transferring outside the household. Within the household, the coefficients for transfers and for household non food expenditures are both not significant but quite large (between 4 and 5 percentage points each); considering the sum of the two types of expenditures within the household, we find a decrease of 9 percentage points significant at 10 percent level.[44] This means that men who are willing to hide and got the opportunity to do so drastically decrease their transfers and expenses for kin both within and outside the household. The funds released through this decrease in transfers allows men to spend more on personal expenditures — we find an increase by 8 percentage points.

Regarding the female sample, when looking at Panel A of Table 13, 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 is positive. However, we find a weak negative effect on the share devoted to investment purchases among women who were willing to pay to hide income (Panel A2). Though, we understand from Panels B and C that the behaviors seem strongly

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

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

[44] Results are not shown but available upon request.

heterogeneous among women depending on the position in the consumption distribution. Indeed, most of the results of Panel A are driven by poorer women (Panel B1) and especially by those with a positive WTP (Panel B2). While all women below the median decrease their transfers to kin outside the household by 3.2 percentage points; this effect reaches 4.8 percentage points for women in this sample with a positive WTP to hide. The latter group of women decreases dramatically the share devoted to investment by 11.5 percentage points. The combination of these two effects on transfers to kin outside the household and on investment raises a natural subsequent question about where these women reallocate this extra money. Though we find no significant effect, women seem to spend more on personal and health, on transfers and food in the household, and on transfers to neighbors. From this analysis, we see that the poorer women are the most responsive to the offered strategy to hide income: they seem to try to escape the pressure to redistribute from kin living in the community so as to spend more for themselves and their households. Alternatively, when they are not offered the opportunity to hide they invest a larger share of their income, suggestive of an alternative strategy to avoid redistributive pressure.

7 Conclusion

This paper contributes to the growing but still scarce literature on the potential adverse effects of informal redistribution in developing economies. It sheds light on the possible causes of poverty traps in sub-Saharan Africa. Our paper is the first to both identify the hidden cost of informal redistribution, through the WTP to hide income from peers, and to link it to the effect of redistributive obligations on resources allocation within and between households. We rely on an original experiment conducted in dense urban areas in Senegal that combines a lab-in-the-field and a randomized controlled trial.

First, the widespread and high WTP to hide income provides us with an estimate of the deadweight loss associated with the redistributive pressure: two-thirds of the experiment participants were willing to escape from the redistributive and subsequently willing to forgo up to 14% of their income to keep them hidden from peers. We find that redistributive pressure comes the extended family, especially from kin living in the community relative to direct household members.

Second, offering people the opportunity to keep income unobservable reduces by 27% the share of income they transfer to to kin, and symmetrically increases personal and health expenditures. Interestingly, women avoid only redistribution towards kin outside the household, while men decrease their contributions to both household members and other kin. This goes in line with the traditional role of men as main contributors to household expenditures while women are more active in larger kinship networks, through their (financial) participation in events such as ceremonies (Boltz and Villar, 2013). Another important result is that when given the opportunity to hide, women in poorest households decrease drastically their share devoted to the purchase of productive assets. This suggests that investing in small inputs represents for these women an alternative strategy to gain more control over their resources.

The strong WTP for income privacy and the considerable effects income hiding induces on resource allocation point to the importance of designing adequate financial products such as savings, especially when they would protect individuals secrecy from other household or kin members and offer more control over their resources. A formal insurance scheme that can offer at least as good insurance coverage as the extended family would allow a large majority of the population to save 14% of their revenues. This is all the more important since the population at stake are also the most vulnerable groups. In the light of the result for poor women making small daily investments that do not allow them to improve their economic conditions, offering them a safe, unobserved savings device would enable them to capitalize for a larger investment and help them to escape this poverty trap. However, further research is needed to capture the general equilibrium effects, including the benefits of social redistribution in terms of risk-sharing as well as the distortionary costs identified here. Understanding the linkages between formal and informal institutions would help to assess the effects of introducing a large-scale insurance scheme in economies with predominant family-provided insurance. Therefore, this paper calls for further research investigating the welfare gains associated with the design of adequate financial products, e.g. savings accounts, that offer individuals more control over their resources.

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8 Appendix

Table 8: Full lottery sample, *Private* and *Public* lottery cards subsamples

	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 among players	811	0,53	533	0,55	278	0,49	0,15
Individual sociodemographic 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 expenses	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
Individual position in the household							
Household head	815	0,20	536	0,21	278	0,17	0,19
Spouse of household head	815	0,25	536	0,25	278	0,26	0,78
Son or daughter of household head	815	0,28	536	0,28	278	0,29	0,90
Sibling of household 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 responsibility 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 9: 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" cards, *O* stands for "option" cards.

Table 10: Distribution of gains for option cards

		Choice made at given price		
Card	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 percentage of individuals having chosen option A (respectively 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* stands for "preference-based".

Table 11: Effect of the opportunity to hide gains on transfers & allocation choices
Sample: Men

Dependant variables:	Private	Health	Household		**Transfers to**			Productive	Saved gains
Commodity shares	Goods	Care	Food	Non-food	**Hh members**	**Other kin**	Non-kin	Investment	& Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A (N=204): All men									
Card with opportunity to hide	5.452	2.274	0.957	−4.251	0.970	−4.984	−0.107	0.536	0.005
	(4.091)	(2.471)	(6.039)	(4.102)	(3.934)	(2.530)	(1.773)	(3.579)	(2.858)
R^2	0.19	0.07	0.21	0.19	0.27	0.15	0.15	0.17	0.14
Chi-2 (p-value)	0.01	0.99	0.00	0.01	0.00	0.14	0.18	0.05	0.17
Panel B (N=140): Men with WTP to hide$^{\dagger} \geq 0$									
Card with opportunity to hide	8.024	2.871	−0.037	−4.055	−4.966	−8.297	−0.385	3.030	0.731
	(4.915)	(2.966)	(6.868)	(5.055)	(4.613)	(3.293)	(2.234)	(3.880)	(3.396)
R^2	0.20	0.12	0.25	0.18	0.32	0.23	0.21	0.24	0.25
Chi-2 (p-value)	0.13	0.91	0.01	0.28	0.00	0.05	0.10	0.03	0.01
Panel C (N=140): Unconditional means									
Public cards (N=51)	11.218	1.089	31.997	12.738	16.267	6.427	3.721	5.413	4.357
Public cards & WTP >=0 (N=35)	9.749	1.587	32.18	12.385	21.164	9.365	4.166	1.429	4.444
Public cards & WTP <0 (N=16)	14.432	0	31.597	13.511	5.556	0	2.748	14.13	4.167

S.e. in (). Panels A & B: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
Dependant variables: 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. Pane B: men with positive WTP to hide income. Panel C presents unconditional means.
Control variables: see Table 5 for the full list of regressors. Community and time of sessions fixed effects included in all panels and for all outcomes.

Table 12: Effect of the opportunity to hide lottery gains on *transfers* & allocation choices

Sample: all individuals - Below/above median of household food consumption per capita

Dependant variables:	Private	Health	Household		**Transfers to**			Productive	Saved gains
Commodity shares	Goods	Care	Food	Non-food	**Hh members**	**Other kin**	Non-kin	Investment	& Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: All individuals									
Panel A1 (N=654): All									
Card with opportunity to hide	3.870	1.318	−0.748	−1.448	−0.260	−1.976	0.424	−1.730	0.377
	(2.092)	(1.326)	(3.028)	(2.145)	(2.016)	(1.170)	(0.972)	(2.716)	(1.475)
R^2	0.11	0.05	0.12	0.06	0.13	0.05	0.06	0.10	0.04
Chi-2 (p-value)	0.00	0.37	0.00	0.03	0.00	0.19	0.14	0.00	0.57
Panel A2 (N=433): sub-sample with WTP to hide$^{\dagger} \geq 0$									
Card with opportunity to hide	5.188	2.936	1.407	−3.412	−2.382	−3.229	1.397	−2.808	0.310
	(2.689)	(1.564)	(3.625)	(2.577)	(2.440)	(1.561)	(1.268)	(3.373)	(1.831)
R^2	0.12	0.07	0.17	0.07	0.16	0.09	0.07	0.13	0.06
Chi-2 (p-value)	0.00	0.36	0.00	0.29	0.00	0.05	0.22	0.00	0.37
Panel A3 (N=433): Unconditional means									
Public cards (N=164)	10.754	2.724	26.445	11.495	15.38	4.643	3.144	17.344	3.318
Public cards & WTP >=0 (N=104)	10.989	1.784	24.047	12.042	17.769	5.876	2.556	17.361	3.764
Public cards & WTP <0 (N=60)	10.347	4.352	30.601	10.548	11.238	2.504	4.164	17.314	2.546
Panel B: Below median of household daily food consumption									
Panel B1 (N=356): All									
Card with opportunity to hide	2.378	2.817	−0.519	−1.702	0.250	−2.489	0.334	−3.189	1.199
	(2.771)	(1.861)	(4.180)	(2.889)	(2.741)	(1.394)	(1.321)	(3.181)	(2.197)
R^2	0.10	0.07	0.11	0.07	0.17	0.11	0.11	0.17	0.08
Chi-2 (p-value)	0.06	0.71	0.02	0.60	0.00	0.06	0.05	0.00	0.36
Panel B2 (N=230): Sub-sample with WTP to hide$^{\dagger} \geq 0$									
Card with opportunity to hide	4.688	4.446	3.882	−0.765	−0.386	−3.572	0.255	−6.527	−2.034
	(3.437)	(2.337)	(4.974)	(3.468)	(3.262)	(1.711)	(1.781)	(3.936)	(2.768)
R^2	0.13	0.13	0.20	0.10	0.23	0.17	0.15	0.25	0.12
Chi-2 (p-value)	0.16	0.22	0.00	0.57	0.00	0.03	0.07	0.00	0.28
Panel B3: Unconditional means									
Public cards (N=89)	11.822	1.81	28.493	11.799	15.583	3.973	2.633	16.011	3.777
Public cards & WTP >=0 (N=59)	11.414	1.977	25.436	11.321	17.216	4.802	2.612	16.441	4.896
Panel C: Above median of household daily food consumption									
Panel C1 (N=298): All									
Card with opportunity to hide	6.220	−0.890	0.780	−0.887	−1.693	−1.978	0.132	−0.532	−1.092
	(3.086)	(1.852)	(4.322)	(3.146)	(2.928)	(1.864)	(1.411)	(4.327)	(1.809)
R^2	0.21	0.11	0.20	0.14	0.14	0.14	0.06	0.19	0.10
Chi-2 (p-value)	0.00	0.17	0.00	0.01	0.02	0.02	0.88	0.00	0.23
Panel C2 (N=203): Sub-sample with WTP to hide$^{\dagger} \geq 0$									
Card with opportunity to hide	7.497	0.794	−2.024	−3.683	−4.520	−3.589	2.390	−0.055	2.387
	(4.180)	(1.992)	(5.234)	(3.701)	(3.647)	(2.620)	(1.728)	(5.345)	(2.234)
R^2	0.21	0.11	0.26	0.21	0.15	0.18	0.15	0.23	0.15
Chi-2 (p-value)	0.00	0.73	0.00	0.00	0.13	0.02	0.22	0.00	0.16
Panel C3: Unconditional means									
Public cards (N=75)	9.486	3.807	24.015	11.134	15.139	5.437	3.752	18.926	2.775
Public cards & WTP >=0 (N=45)	10.431	1.531	22.226	12.988	18.494	7.284	2.483	18.568	2.279

S.e. in (). Panels A, B,& C: System of linear equations estimated with a SUR model.

† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).

Dependant variables: 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 B (resp. C) correspond to individuals below or equal (resp. strictly above) to the median of household daily food consumption. Sub-panels A1, B1 & C1: whole sample considered in the corresponding panel, Sub-panels A2, B2 & C2: sub-sample of women with positive WTP to hide income. Sub-panels A3, B3 & C3: unconditional means.

Control variables: see Table 5 for the full list of regressors. Community and time of sessions fixed effects included in all panels and for all outcomes.

Table 13: Effect of the opportunity to hide lottery gains on *transfers* & allocation choices

Sample: Women - Below/above median of household food consumption per capita

Dependant variables:	Private	Health	Household		**Transfers to**			Productive	Saved gains
Commodity shares	Goods	Care	Food	Non-food	**Hh members**	**Other kin**	Non-kin	Investment	& Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Panel A: All women									
Panel A1 (N=450): All									
Card with opportunity to hide	3.330	1.073	0.625	−0.950	−0.982	−1.034	0.518	−4.294	0.998
	(2.421)	(1.575)	(3.490)	(2.513)	(2.320)	(1.271)	(1.177)	(3.590)	(1.719)
R^2	0.13	0.09	0.12	0.06	0.12	0.07	0.06	0.08	0.05
Chi-2 (p-value)	0.00	0.04	0.00	0.29	0.00	0.25	0.64	0.04	0.65
Panel A2 (N=293): sub-sample with WTP to hide† ≥ 0									
Card with opportunity to hide	5.067	2.980	4.910	−4.235	−1.299	−1.355	1.607	−8.375	1.250
	(3.279)	(1.866)	(4.295)	(2.967)	(2.836)	(1.682)	(1.569)	(4.628)	(2.142)
R^2	0.13	0.12	0.20	0.10	0.16	0.10	0.08	0.12	0.08
Chi-2 (p-value)	0.02	0.12	0.00	0.22	0.00	0.19	0.66	0.05	0.55
Panel A3 (N=293): Unconditional means									
Public cards (N=113)	10.544	3.461	23.939	10.934	14.979	3.837	2.884	22.729	2.85
Public cards & WTP >=0 (N=69)	11.618	1.884	19.922	11.868	16.047	4.107	1.74	25.443	3.419
Public cards & WTP <0 (N=44)	8.861	5.934	30.239	9.47	13.304	3.415	4.679	18.472	1.957
Panel B: Women below median of household daily food consumption									
Panel B1 (N=242): All									
Card with opportunity to hide	1.818	3.018	1.388	−1.817	−0.440	−3.194	1.568	−6.065	1.975
	(3.248)	(2.176)	(4.819)	(3.261)	(3.100)	(1.599)	(1.642)	(4.195)	(2.527)
R^2	0.19	0.12	0.16	0.07	0.21	0.17	0.10	0.18	0.11
Chi-2 (p-value)	0.00	0.32	0.01	0.86	0.00	0.01	0.65	0.00	0.30
Panel B2 (N=156): Sub-sample with WTP to hide† ≥ 0									
Card with opportunity to hide	4.766	3.968	5.294	0.161	1.559	−4.763	2.188	−11.474	−0.668
	(4.318)	(2.934)	(5.777)	(3.722)	(3.786)	(2.062)	(2.322)	(5.500)	(3.129)
R^2	0.18	0.20	0.27	0.13	0.30	0.21	0.15	0.25	0.13
Chi-2 (p-value)	0.13	0.11	0.00	0.65	0.00	0.06	0.48	0.00	0.69
Panel B3: Unconditional means									
Public cards (N=61)	12.566	1.73	25.384	11.02	15.146	4.521	1.906	21.539	3.689
Public cards & WTP >=0 (N=39)	12.65	1.567	20.855	10.142	15.883	5.271	1.496	24.587	4.558
Panel C: Women above median of household daily food consumption									
Panel C1 (N=208): All									
Card with opportunity to hide	6.195	−2.195	−0.925	1.746	−2.082	1.173	−1.151	−2.427	−0.505
	(3.348)	(2.298)	(4.944)	(3.900)	(3.357)	(1.879)	(1.687)	(5.490)	(2.130)
R^2	0.28	0.14	0.20	0.14	0.15	0.19	0.09	0.25	0.16
Chi-2 (p-value)	0.00	0.19	0.00	0.14	0.12	0.01	0.82	0.00	0.05
Panel C2 (N=137): Sub-sample with WTP to hide† ≥ 0									
Card with opportunity to hide	8.493	0.135	−0.044	−4.913	−3.466	2.423	1.062	−6.775	4.133
	(4.776)	(2.130)	(6.458)	(4.672)	(3.995)	(2.533)	(2.025)	(6.902)	(2.778)
R^2	0.32	0.15	0.28	0.25	0.19	0.28	0.19	0.33	0.26
Chi-2 (p-value)	0.00	0.59	0.00	0.01	0.28	0.00	0.25	0.00	0.01
Panel C3: Unconditional means									
Public cards (N=52)	8.172	5.491	22.244	10.833	14.783	3.034	4.032	24.124	1.866
Public cards & WTP >=0 (N=30)	10.276	2.296	18.709	14.111	16.259	2.593	2.057	26.556	1.937

S.e. in (). Panels A, B,& C: System of linear equations estimated with a SUR model.

† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).

Dependant variables: 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 B (resp. C) correspond to women below or equal (resp. strictly above) to the median of household daily food consumption. Sub-panels A1, B1 & C1: whole sample considered in the corresponding panel, Sub-panels A2, B2 & C2: sub-sample of women with positive WTP to hide income. Sub-panels A3, B3 & C3: unconditional means.

Control variables: see Table 5 for the full list of regressors. Community and time of sessions fixed effects included in all panels and for all outcomes.

9 Online Appendix

9.1 Appendix A: Protocole

Figure 1: Schema of the experiment in four steps

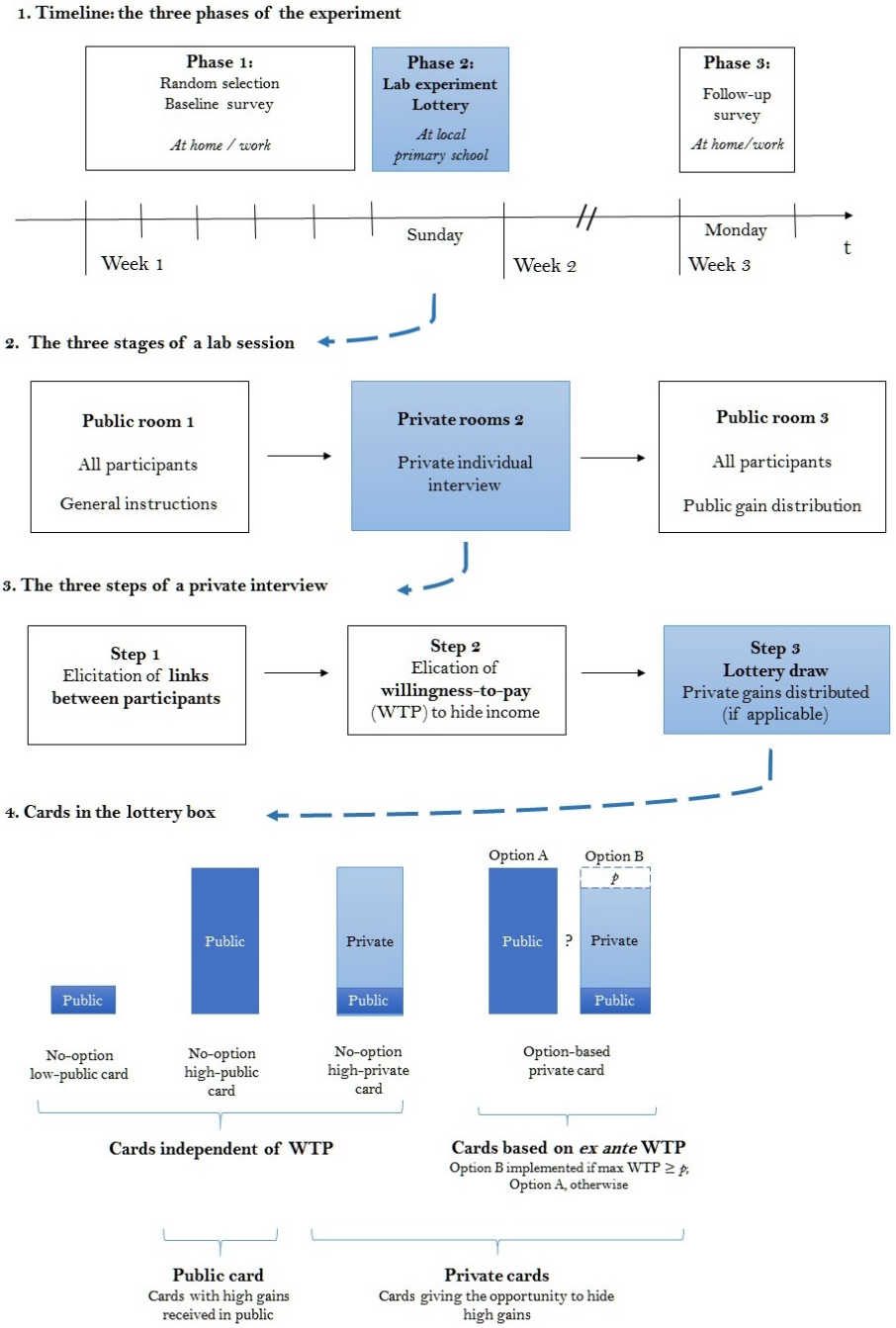


Table 14: Attrition between baseline and lab phase

Samples	Baseline N (1a)	Baseline Mean (1b)	Lab N (2a)	Lab Mean (2b)	Attrited N (3a)	Attrited Mean (3b)	Diff. P-values (2)-(3)
Experimental variations							
Selected with another household member	922	0.64	816	0.65	106	0.55	0.03
Individual sociodemographic 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 schooling	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 expenses	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
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 responsibility 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 15: Attrition between lab phase and post-lab interviews

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 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 schooling	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 expenses	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
Individual position in the household							
Household head	796	0.19	771	0.19	25	0.28	0.25
Spouse of household head	796	0.25	771	0.25	25	0.24	0.90
Son or daughter of household head	796	0.29	771	0.29	25	0.24	0.58
Sibling of household 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 responsibility 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

9.2 Appendix B: Descriptive Statistics

9.2.1 Estimation of the price elasticity for income privacy

The probability that subject i chooses to pay p, when p lies in $\{0, 200, 500, 700, 1000\}$, takes a standard logit form.[45] We estimate a panel random effect logit model, since each individual was asked to choose option A or 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. This model allow us to estimate the price elasticity for income privacy, controlling for observable characteristics of the subjects.

Table 16 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.

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

	All	**Women**	**Men**
	(1)	(1w)	(1m)
Price = 200 FCFA	-3.19^{***}	-3.22^{***}	-2.39^{***}
	(0.44)	(0.55)	(0.75)
Price = 500 FCFA	-5.85^{***}	-5.61^{***}	-5.18^{***}
	(0.53)	(0.68)	(0.89)
Price = 700 FCFA	-8.19^{***}	-7.87^{***}	-7.19^{***}
	(0.60)	(0.80)	(0.98)
Price = 1000 FCFA	-9.43^{***}	-9.13^{***}	-8.14^{***}
	(0.63)	(0.87)	(1.01)
Number of observations	3855	2620	1235

Panel logit with random effect model; Community and time fixed effects included; robust standard errors in (); $^{*}p < 0.10, ^{**}p < 0.05, ^{***}p < 0.01$.
Dependent variable: $Hide_{ik}$ = 1 if subject i wants to hide at price $p = k$.
Controls not shown: same controls as in Table 17.

[45] 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) : $U_{ik} = V_{ik} + \zeta_i + \varepsilon_{ik}$, 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 $\sigma^2_\varepsilon = \pi/3$. V_{ik} is the deterministic utility of choosing option k and is a linear function of observable characteristics X_i and price p: $V_{ik} = \alpha_k + X_i' \beta_k + \gamma_k\, p$.

Figure 2

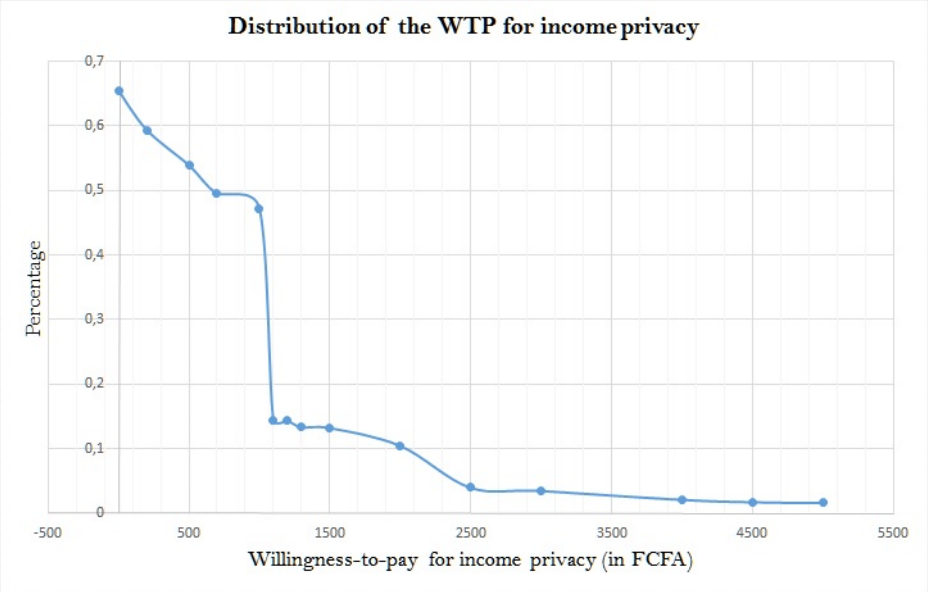
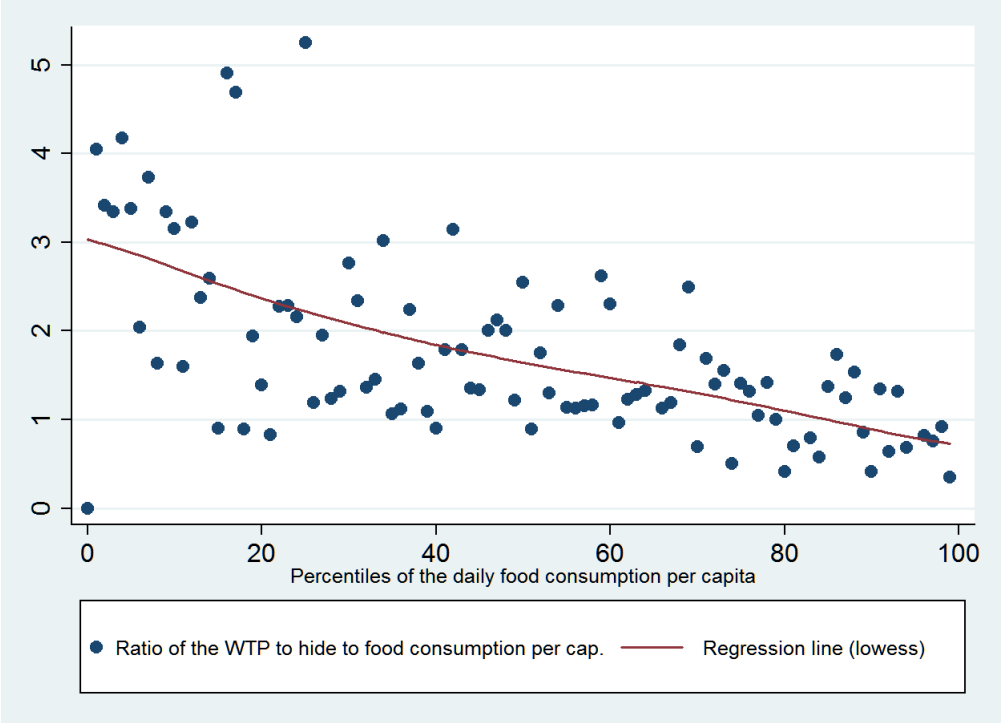


Figure 3: Relative Willingness-To-Pay (WTP) to hide income by percentiles of the daily food consumption per capita



9.3 Appendix C: Results on willingness-to-pay to hide

Table 17: 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 with another hh member	−20.2	−122.8	90.8
	(111.8)	(120.6)	(215.6)
Any known non-kin in the session	−14.6	−93.6	87.9
	(148.5)	(130.9)	(331.3)
Any kin in the session (excl. pairs)	285.0**	450.8***	−227.1
	(131.7)	(133.3)	(306.7)
Individual demographics			
Male	191.6*		
	(105.8)		
Age	−2.0	−5.4	1.7
	(5.1)	(6.0)	(12.1)
French/Arabic education	−64.0	−75.9	−17.7
	(105.4)	(130.5)	(196.1)
Koranic schooling	−98.4	−136.7	7.6
	(103.9)	(113.6)	(178.2)
Single	229.6**	186.4	528.0**
	(116.0)	(144.1)	(244.9)
Individual economic situation			
Formal sector	−148.5+	−164.0	−86.8
	(95.2)	(118.8)	(254.9)
Average income in last 3 months (log)	12.2**	15.3*	9.6
	(6.0)	(7.8)	(14.0)
Has some savings	108.5	56.5	271.3
	(76.4)	(109.0)	(177.6)
Individual position in the household			
Household head	356.7**	434.6*	454.1*
	(170.0)	(224.6)	(245.5)
Spouse of household head	275.8*	274.3*	
	(146.2)	(151.1)	
Child of household head	40.5	−139.3	399.4*
	(143.5)	(173.8)	(216.3)
Contributes to household food expenses	34.0	−21.3	14.1
	(110.8)	(116.3)	(236.5)
Individual position in the community			
Has always lived in this community	192.7	379.4***	−306.8
	(134.9)	(139.9)	(248.2)
Has a responsibility in the community	−483.4***	−84.4	−1296.4***
	(114.2)	(159.6)	(289.5)
Any kin leaving in the community	−59.2	−23.9	−160.7
	(80.3)	(69.4)	(222.7)
Household characteristics			
Household size	14.6	19.7	15.8
	(11.5)	(12.9)	(21.8)
Share of dependent household members (%)	−3.6	−7.9**	8.0
	(3.0)	(3.2)	(6.6)
Household daily food consumption p.c. (log)	209.8*	94.0	454.2*
	(121.4)	(115.5)	(263.7)
House is rented	−109.4	−12.1	−422.2**
	(107.2)	(131.7)	(207.2)
Constant	−944.5	320.7	−3386.7*
	(785.0)	(781.6)	(1959.3)
Mean of the WTP to hide (in FCFA)	732.4	651.2	902.7
Number of observations	771	524	247
AIC	7514.2	4916.9	2593.8
Test Chi-2 (p-value)	0.00	0.00	0.00

Interval-data regression model; standard errors clustered at the session level in ()
$^{+}p < 0.12$,$^{*}p < 0.10$,$^{**}p < 0.05$,$^{***}p < 0.01$.
† Dependent 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 18: Willingness-to-pay to hide income

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	1*w*	2	2*w*
Experimental variations				
Selected with another hh member	151.1	36.0	−134.3	−175.6
	(155.1)	(161.8)	(139.6)	(153.2)
Any known non-kin in the session	−16.1	9.7	8.5	−104.9
	(154.0)	(127.0)	(257.4)	(201.2)
Any kin in the session (excl. pairs)	291.3	405.5*	258.5	375.5*
	(222.1)	(224.2)	(178.9)	(208.0)
Individual demographics				
Male	45.3		321.8*	
	(161.0)		(168.7)	
Age	5.3	−1.9	−8.8	−11.0+
	(6.1)	(8.3)	(7.6)	(7.0)
French/Arabic education	−128.2	−211.6	−55.5	15.5
	(178.8)	(252.8)	(149.6)	(173.0)
Koranic schooling	−53.8	−29.7	−144.3	−157.3
	(144.5)	(133.9)	(123.3)	(163.1)
Single	349.7*	261.3	130.9	37.5
	(194.1)	(249.9)	(133.4)	(212.2)
Individual economic situation				
Formal sector	−339.0**	−462.4**	−31.2	34.6
	(171.8)	(219.4)	(172.9)	(174.9)
Average income in last 3 months (log)	17.8*	29.3**	4.7	5.3
	(10.5)	(14.2)	(12.2)	(11.8)
Has some savings	119.4	127.0	159.0	69.0
	(95.5)	(103.2)	(137.1)	(148.1)
Individual position in the household				
Household head	495.2**	625.6	310.4	426.7*
	(245.3)	(416.0)	(229.2)	(224.0)
Spouse of household head	86.3	105.5	454.3**	413.8**
	(191.4)	(226.1)	(214.3)	(188.8)
Child of household head	−15.4	−224.4	121.5	−3.8
	(144.0)	(177.1)	(190.5)	(203.6)
Contributes to household food expenses	49.9	−5.9	8.5	27.3
	(156.4)	(162.1)	(210.9)	(181.9)
Individual position in the community				
Has always lived in this community	285.5***	442.7***	55.2	235.7
	(110.0)	(161.0)	(198.7)	(213.8)
Has a responsibility in the community	−245.3	107.7	−662.4***	−177.9
	(187.1)	(316.8)	(210.8)	(235.1)
Any kin leaving in the community	−51.1	−149.8	−61.4	93.6
	(137.6)	(172.0)	(147.6)	(134.7)
Household charcteristics				
Household size	16.4	17.2	−0.6	25.7
	(13.0)	(16.4)	(18.6)	(16.6)
Share of dependent household members(%)	−4.2	−11.3**	−4.1	−8.1**
	(3.8)	(5.1)	(4.3)	(3.8)
Household daily food consumption p.c. (log)	149.0	28.7	268.6	91.3
	(250.9)	(311.1)	(208.5)	(236.0)
Household doesn't own house	−91.6	34.4	−218.8	−26.6
	(134.0)	(129.6)	(166.2)	(199.5)
Constant	−752.2	387.6	−1139.4	394.5
	(1533.3)	(1908.1)	(1276.9)	(1574.6)
Mean of the WTP to hide (in FCFA)	688.5	650	776.1	652.4
Number of observations	386	260	385	264
AIC	3699.9	2391.0	3848.1	2550.0
Test Chi-2 (p-value)	0.00	0.00	0.00	0.00

Interval-data regression model; standard errors clustered at the session level in ()

$^{+}p < 0.12$,$^{*}p < 0.10$,$^{**}p < 0.05$,$^{***}p < 0.01$. Interval-censored data regression model;

† Dependent 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 daily household food expenditure per capita is 420 FCFA.

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

Table 19: Willingness-to-pay to hide income : *Logit model (average marginal effects)*

Maximum WTP to hide[†]	**All** (1)	**Women** (1w)	**Men** (1m)
Experimental variations			
Selected with another hh member	−0.006	−0.004	−0.057
	(0.039)	(0.045)	(0.071)
Any known non-kin in the session	0.027	−0.018	0.130^{+}
	(0.042)	(0.058)	(0.080)
Any kin in the session (excl. pairs)	0.106*	0.190***	−0.059
	(0.057)	(0.059)	(0.085)
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**	−0.076	−0.157*
	(0.048)	(0.055)	(0.094)
Koranic schooling	−0.031	−0.046	−0.005
	(0.037)	(0.046)	(0.060)
Single	0.096**	0.103	0.162**
	(0.041)	(0.069)	(0.082)
Individual economic situation			
Formal sector	−0.033	0.000	−0.009
	(0.032)	(0.064)	(0.080)
Average income in last 3 months (log)	0.002	0.005	−0.001
	(0.003)	(0.003)	(0.005)
Has some savings	0.023	0.022	0.042
	(0.032)	(0.043)	(0.071)
Individual position in the household			
Household head	0.134*	0.172*	0.108
	(0.070)	(0.098)	(0.075)
Spouse of household head	0.081*	0.088*	
	(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)	(0.077)
Individual position in the community			
Has always lived in the community	0.004	0.046	−0.119
	(0.044)	(0.041)	(0.083)
Has a responsibility in the community	−0.153***	−0.018	−0.346***
	(0.036)	(0.068)	(0.072)
Any kin leaving in the community	0.005	0.008	−0.021
	(0.031)	(0.030)	(0.073)
Household characteristics			
Household size	0.005	0.006	0.006
	(0.004)	(0.005)	(0.008)
Share of dependent household members (%)	−0.002	−0.004***	0.003*
	(0.001)	(0.001)	(0.002)
LN household food expendit. p.c. last 3 month	0.040	0.016	0.106
	(0.029)	(0.041)	(0.069)
Household doesn't own house	−0.041	−0.020	−0.099
	(0.049)	(0.054)	(0.086)
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 ; standard errors 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.

9.4 Appendix D: Results on the effect of hidden income

Table 20: 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
R^2	0.0018	0.010	0.010	0.049	0.049
Community and Session-time f.e.		X		X	
Session f.e.			X		X
Interviewer f.e.				X	X

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

Table 21: The effect of the opportunity to hide lottery gains on allocation choices

Sample: all individuals - Without controls

Dependant variables:	Private	Health	Household		**Transfers to**		Productive	Saved gains
Commodity shares	Goods	Care	Food	Non-food	Kin	Non-kin	Investment	& Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A (N=682): Whole sample								
Card with opportunity to hide	2.979	1.228	−0.429	−1.858	−2.176	0.692	−1.420	0.412
	(2.112)	(1.269)	(3.084)	(2.080)	(2.296)	(0.935)	(2.723)	(1.415)
R^2	0.02	0.01	0.02	0.04	0.02	0.01	0.02	0.01
Chi-2 (p-value)	0.30	0.42	0.40	0.00	0.19	0.46	0.11	0.75
Panel B (N=448): WTP to hide$^{\dagger} \geq 0$								
Card with opportunity to hide	4.261	2.264	1.571	−3.185	−6.326	1.730	−2.156	0.351
	(2.682)	(1.506)	(3.774)	(2.478)	(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	0.20	0.12	0.64	0.11	0.13	0.58
Panel C (N=234): WTP to hide$^{\dagger} < 0$								
Card with opportunity to hide	1.359	−0.415	−2.762	0.500	4.591	−1.417	−1.175	0.369
	(3.408)	(2.328)	(5.347)	(3.796)	(3.716)	(1.410)	(4.471)	(2.377)
R^2	0.03	0.01	0.03	0.06	0.08	0.02	0.06	0.01
Chi-2 (p-value)	0.80	0.98	0.78	0.14	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 $\geq 0^{\ddagger}$	3.529	2.832	4.455	−3.918	−11.392	2.999	−0.985	−0.107
	(4.428)	(2.662)	(6.467)	(4.362)	(4.796)	(1.959)	(5.718)	(2.972)
R^2	0.02	0.02	0.02	0.04	0.03	0.02	0.02	0.01
Chi-2 (p-value)	0.29	0.45	0.40	0.01	0.05	0.37	0.19	0.87
Panel E: Unconditional means								
Public cards (N=164)	10.754	2.724	26.445	11.495	20.7	3.144	17.344	5.599
Public cards & WTP >=0 (N=104)	10.989	1.784	24.047	12.042	24.713	2.556	17.361	5.599
Public cards & WTP <0 (N=60)	10.347	4.352	30.601	10.548	13.742	4.164	17.314	5.599

S.e. in (). 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).

‡ Panel D controls for main effects: WTP to hide and card with opportunity to hide lottery gains. The significant interaction term for transfers to kin is identified on the reference group of 29 individuals who did not get the card with the opportunity to hide, were not willing to hide *and* did send transfers to kin.

Dependant variables: 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 control variable. Community and time of sessions fixed effects included in all panels and for all outcomes.

Table 22: Effect of the oppportunity to hide for *different levels of the willingness to pay to hide*
Sample: all individuals

Dependant variables:	Private	Health	Household		**Transfers to**		Productive	Saved gains
Commodity shares	Goods	Care	Food	Non-food	Kin	Non-kin	Investment	& Other
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A (N=433): WTP to hide$^{\dagger} \geq 0$								
Card with opportunity to hide	5.168	2.910	1.362	−3.253	−6.568	1.404	−2.831	0.304
	(2.689)	(1.564)	(3.625)	(2.568)	(2.780)	(1.268)	(3.373)	(1.831)
R^2	0.12	0.07	0.17	0.07	0.13	0.07	0.13	0.06
Chi-2 (p-value)	0.00	0.37	0.00	0.23	0.00	0.22	0.00	0.35
Panel B (N=389): WTP to hide$^{\dagger} \geq 200$								
Card with opportunity to hide	4.451	2.559	1.186	−4.120	−5.649	1.026	−1.473	0.333
	(2.741)	(1.529)	(3.785)	(2.658)	(2.948)	(1.263)	(3.519)	(1.916)
R^2	0.13	0.07	0.18	0.07	0.13	0.09	0.13	0.08
Chi-2 (p-value)	0.00	0.47	0.00	0.38	0.00	0.08	0.00	0.17
Panel C (N=333): WTP to hide$^{\dagger} \geq 700$								
Card with opportunity to hide	5.686	2.312	0.684	−3.868	−7.876	0.540	−1.865	1.502
	(3.091)	(1.560)	(4.030)	(2.731)	(3.273)	(1.419)	(3.929)	(2.114)
R^2	0.14	0.09	0.20	0.08	0.13	0.10	0.15	0.09
Chi-2 (p-value)	0.00	0.43	0.00	0.21	0.01	0.15	0.00	0.21
Panel D: Unconditional means								
Public cards & WTP >=0 (N=104)	10.989	1.784	24.047	12.042	24.713	2.556	17.361	5.599
Public cards & WTP >=200 (N=99)	10.982	1.874	24.757	12.65	24.278	2.685	16.105	5.714
Public cards & WTP >=700 (N=82)	11.227	1.694	25.377	11.194	26.208	2.971	16.328	5.069

S.e. in (). Panels A, B, & C: System of linear equations estimated with a SUR model.
† WTP to hide = Willingness to pay to hide (as measured in the lab experiment).
Dependant variables: 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: see Table 5 for the full list of regressors.
Community and time of sessions fixed effects included in all panels and for all outcomes.

Table 23: Effect of the opportunity to hide on labour supply and income
Sample: all individuals

Labour outcomes over 7 days post lottery	*Worked (Dummy)*		*Income (in log)*	
	OLS	Logit	OLS	Tobit
Panel A (N=654): Whole sample				
Card with opportunity to hide	0.029	0.154	0.151	0.264
	(0.038)	(0.249)	(0.359)	(0.518)
R^2	0.32		0.35	
Chi-2 (p-value)	0.00	0.00	0.00	0.00
Panel B (N=429): WTP to hide$^{\dagger} \geq 0$				
Card with opportunity to hide	−0.055	−0.415	−0.515	−0.775
	(0.048)	(0.309)	(0.457)	(0.670)
R^2	0.31		0.33	
Chi-2 (p-value)	0.00	0.00	0.00	0.00
Panel C: Unconditional means				
Public cards (N=161)	.634	12683.05		
Public cards & WTP >=0 (N=103)	.66	12316.71		
Public cards & WTP <0 (N=58)	.586	13333.62		

S.e. in (). Dependant var: Col (1) and (2), worked since the lottery -i.e. in the past 7 days- (dummy), col (3) and (4), total income earned since lottery-I.e. in past 7 days- (in log). Col (1) and (3) estimated in a linear regression model, col (2) estimated with a logitistic regression, col (4) estimated with a Tobit regression. Sample: in all panels, individuals who drew the card 1000 FCFA in public are excluded. Panel A: whole sample, Panel B: sample with positive WTP to hide income.

Control variables: see Table 5 for the full list of regressors. Community and time-of-session fixed effects included in all specifications.