The Effect of Social Pressure on Expenditures in Malawi*

Jessica Goldberg†

March 29, 2017

Abstract

I vary the observability of windfall payments to 294 members of agricultural clubs in rural Malawi in order to study the effect of redistributive pressure on the timing of expenditures. While other studies have documented that social pressure affects the quantity of income and consumption, I focus on timing because spending money quickly may be a strategy for reducing obligatory transfers. Respondents who receive money in the presence of their agricultural club spend approximately 30 percent more in the week immediately following the payment than those who receive equivalent transfers in private settings. There are limited changes in the composition of spending, but some evidence that social pressure to share windfall income has a larger effect on poorer households.

*An earlier draft of this paper was circulated under the title "The Lesser of Two Evils: The Roles of Social Pressure and Impatience in Consumption Decisions." The research was supported by grants from the Rackham Graduate School at the University of Michigan. It was approved by the IRB committee at the University of Michigan. I thank Brian Jacob, Pamela Jakiela, David Lam, Jeff Smith, Laura Schechter, and Dean Yang for their helpful comments, Sai Luo for his outstanding research assistance, and Santhosh Srinivasan and Lutamayo Mwamlima for their assistance with field work. All errors and omissions are my own.

†University of Maryland, goldberg@econ.umd.edu

1 Introduction

Social pressure to share income has been documented in developing and developed-country settings. This redistributive pressure can be embodied in mutually-beneficial informal insurance networks (Townsend 1994) or generate unilateral contributions that reduce the welfare of net donors (Platteau 2000, Comola & Fafchamps 2010). In either case, though especially in the latter, there are incentives to hide income that can distort consumption (Kinnan 2014), investment (Jakiela & Ozier 2016), and borrowing (Baland, Guirkinger & Mali 2011). These distortions can affect timing as well as quantity of consumption and investment. Kinnan (2014) notes that consumption time-paths that would be suboptimal with perfect information can be used by households to hide income and therefore increase private utility when information is imperfect. Social anthropologists document similar a phenomena; for example, Maranz (2001) writes that pressure to share income means that individuals "often made wasteful or ill-considered expenditures just to keep friends from borrowing," and Foster (1965) notes that in peasant societies, "[a] person who improves his position is encouraged...to restore the balance through conspicuous consumption in the form of ritual extravagance," which is "a redistributive mechanism which permits a person or family that potentially threatens community stability to gracefully restore the status quo."

I test whether recipients of windfall income alter the composition or timing of their spending in order to evade redistributive pressure using an experiment with members of Malawian agricultural clubs. In each of 155 clubs, one member is randomly selected to receive a windfall transfer in a public raffle, where all group members know the value of the transfer and the identity of the recipient. Another group member receives an equal-value transfer in private; the group is not informed of the second transfer. Relative to the private recipients, then, public raffle winners are potentially exposed to greater social pressure to share income.

I survey recipients about how they plan to and actually spend their windfalls, with attention to the timing of purchases and to the identity of the intended consumer. While the composition of spending is similar for recipients whose windfall was observed and those who received money secretly, the timing of spending is not: public recipients spend 30 percent more of their prize money in the week immediately following the transfer than private recipients. This accelerated spending is consistent with a framework in which individuals face a time limited opportunity to evade redistributive pressure by reducing their cash-on-hand. It clearly demonstrates that public information imposes a constraint on the consumption patterns that individuals would choose if they were able to maintain privacy about their incomes, with a response along the timing of spending rather than the compositional measures that have been the focus of previous research.

In the framework of informal insurance, income observability may have positive welfare implications. A number of investigations of the extent of informal insurance find that idiosyncratic shocks to household income affect consumption, even after controlling for aggregate consumption (Townsend 1994, Udry 1994, Lund & Fafchamps 2003). Ligon, Thomas & Worrall (2002) shows that limited commitment precludes achieving full insurance, so resolving information asymmetries about income could increase the insurance provided through informal insurance networks.

While a growing literature recognizes the importance of social pressure as distinct from voluntary contributions to informal insurance networks, there are few direct estimates of how such pressure affects individuals' expenditures, and no previous experimental estimates that test strategies for evading redistributive pressure outside of the experimental lab. Well-identified estimates of the effects of social pressure are difficult to obtain, because it is a cause and consequence of complex and often unobservable relationships between individuals and institutions. Baland, Guirkinger & Mali (2011) rely on observational data about borrowing and savings at Cameroonian credit cooperatives and surveys asking members about reasons for simultaneous borrowing and saving. Kinnan (2014), the only previous paper to consider the timing of expenditures in response to redistributive pressure, documents auto-correlation in observational consumption data that is consistent with the predictions of a model of imperfect information and hidden income.

Previous studies experimentally vary observability of financial decision-making in order to study behavior under different information conditions. Ashraf (2009) studies intra-household bargaining by varying whether Filipino spouses' allocations of one day's wages are observed by their partners. Jakiela & Ozier (2016) offer Kenyan participants the opportunity to choose between stylized investment opportunities with different returns, when their decisions are either secret or announced to an audience including members of their extended family. Information matters in both contexts. Filipino husbands allocate more money to their private accounts when their decisions are secret, and Kenyan women forego profitable investments in order to hide returns from their extended families.

To my knowledge, only two other studies combines experimental variation in the observability of income with data about spending or consumption outside the lab. In urban Senegal, Boltz, Marazyan & Villar (2015) measures willingness-to-pay (WTP) to hide income in the lab and sharing of income outside the lab. Wealthier men and women with higher positions in their extended family have higher WTP for income hiding. When given the opportunity to hide some income, personal expenditures rise, and, for those with positive WTP for privacy, transfers to kin fall. Castilla & Walker (2013) use an experiment with public and private lotteries to study intra-household bargaining in Ghana, and find non-cooperative behavior by husbands and wives.

I describe my experiment in Section 2 and the data in Section 3. I discuss the conceptual framework and the analysis in Section 4, and discuss the results in detail in Section 5. Section 6 concludes.

2 Experimental Design

Individuals are exposed to pressure to share when income or consumption is observable. I manipulate the observability of income by making public and private windfall income payments in the form of raffle prizes to members of 155 agricultural clubs in central Malawi. These clubs of approximately 10 members each were formed in late 2007 for the purpose of receiving extension services and borrowing through group liability schemes.[1] In contrast to the samples in Jakiela & Ozier (2016) and Boltz, Marazyan & Villar (2015), these clubs do not include extended family members. This restriction is imposed by group facilitators, because of the challenges and correlated risks of including kin in joint liability borrowing groups. The experiment described in this paper took place in May 2008.

Members who assembled for regularly scheduled meetings (typically, at local primary schools) were given the opportunity to participate in a raffle that would award a cash prize to one winner. In this "public" raffle, the opportunity and value of the prize are announced to the group. Each member draws a ticket from a bag, and the member whose ticket is marked with a star is declared the winner. A staff member records the winner's name and awards the cash prize in front of the whole group. In this way, everyone present knows that there was a raffle; the identity of the winner; and the value of the prize.

Immediately after the awarding of the public prize and conclusion of the club meeting, all club members are interviewed by our field team in private locations near the meeting spot. These private interviews provide the opportunity to award the second, private prize. The recipient of this prize is determined in advance, by computer randomization based on club rosters.[2]

Other club members are not told about the second prize, and instead of awarding the money publicly, the private winner is given his cash while responding to the baseline survey out of view of others in the community. He is told that no one else in the community has received money in secret, and that no one will be told that he (the private winner) received money. A short supplemental survey about expected use of the prize money is

[1] Club members are participants in an experiment about using dynamic incentives to increase loan repayment rates (Gine, Goldberg & Yang 2016).

[2] For each club, I randomly choose a private winner and an alternate, in case the designated private prize recipient was absent or was independently drawn to receive for the public prize. The private prize is always awarded to the secret winner if he is present and not chosen by raffle for the public prize. Otherwise, the secret prize is awarded to the alternate.

administered to both public and private raffle winners. Because the supplemental survey is brief and completing the baseline survey takes longer for some group members than others, it is unlikely that the time to complete the raffle questionnaire signals anything out of the ordinary to other group members.

Both the public and private raffle winners receive MK 2500 ($US 17.86, at an exchange rate of MK 140 = $1 US) paid in cash and on the same day. That sum is roughly equivalent to one-tenth of average annual per capita cash income in Malawi, and at the time would have purchased 25 kg of fertilizer or five chickens. Since the public and private raffle winners are randomly chosen, any differences between how they choose to use the money can be attributed solely to the effect of their communities' awareness – or lack thereof – of their windfall.

3 Data

My final sample is of 294 raffle winners, half of whom won in "public" settings and the other half of whom won under "private" conditions. All prize recipients were surveyed in May 2008, and follow-up surveys were administered to the raffle winners in 78 of the initial 156 clubs in August 2008.[3] There was attrition among winners in clubs that were reinterviewed. In total, 110 prize recipients, or 74 percent of those the survey teams attempted to contact, participated in follow-up surveys about their actual use of the prize money.

The April surveys include time-invariant baseline characteristics and the first set of outcome data, respondents' plans for how and when they would spend the windfall income. Public and private raffle winners were asked to enumerate each purchase they planned to make with the prize money, and these items were categorized and coded by survey staff in the field, at the time of data collection. I aggregate purchases up to seven broad categories: non-durables (including food), durables (clothing, household implements), health and education, investment (including farm inputs and stock for businesses), sharing (money lent or given to others), savings, and other. Respondents were asked about the timing of each purchase (today, within a week, within a month, or later than a month), and who was the intended recipient or beneficiary of the purchase (the respondent him or herself, another member of the household, or someone outside the household). Note that this gives rise to two different potential definitions of redistribution, one based on the categorization of expenditures and the other based on the categorization of recipients. I report results for both measures.

[3]The raffle experiment was embedded within the Gine, Goldberg & Yang (2016) study, and because of budget considerations, an exploratory follow-up to that project revisited only a subset of the initial clubs in August 2008.

August surveys are structured similarly, but ask respondents to report their realized use of the prize money. As in the April survey, respondents were asked to list their purchases and report the timing and beneficiary of each expenditure.

Table 1 presents summary statistics and balancing tests for time-invariant baseline characteristics of the public and private raffle winners collected in the April survey. Panel A reports data for the full sample of 294 winners, and Panel B is restricted to the 110 individuals included in the follow-up survey. Public and private winners do not differ significantly in their gender, age, years of education, land owned, household size, number of children, or house quality score. Forty percent of public winners were resurveyed at endline, compared to 35 percent of private winners; the difference in the likelihood of being resurveyed is not statistically significant, and some of the attrition is because only a subset of clubs were revisited in August.

Table 2 tests for selective attrition. The top panel includes the full baseline sample. Therefore, of the 184 respondents who are recorded as "not in follow-up," no follow-up interviews were attempted for the 146 individuals who were members of clubs that were not revisited. Panel B includes only the 148 members of clubs that were revisited; of those, 110 individuals, or 74 percent of the sample, were successfully interviewed in August. In total, the follow-up survey includes 59 public winners and 51 private winners. Thus, public winners are somewhat overrepresented in the August data, though the difference in the probability that public and private winners are resurveyed is not statistically significant at conventional levels (p=0.223).

Those raffle winners who did respond to the August survey were not observably different from the attritters in their gender, age, land ownership, household size, number of children, or house quality score. They do have an average of one year less schooling (p=0.130) and report an average of 1.6 children, compared to 2.2 in the sample of attritters (p=0.014).

Differential attrition could affect the interpretation of results using the August data. In particular, higher attrition among private raffle winners could indicate fear of exposure: private winners might have been concerned that, despite earlier assurances, their windfall would be revealed to the group during subsequent encounters with the survey team. Table 3 examines this hypothesis by regressing an indicator for being included in the follow-up survey on anticipated spending as reported in the April survey. The sample includes all respondents in clubs that were revisited in August. Column (1) indicates that there is no correlation in anticipated spending in the first week after receiving the prize and the probability of appearing in the August survey. Column (2) tests for a differential correlation between the probability of being resurveyed and anticipated first week spending for public compared to private lottery winners. The last row of the table reports the p-value for the test that public lottery winners and private lottery winners have the same probability of being in the

August survey (at the median value of anticipated spending). For planned spending within a week of the raffles, this p-value is 0.49. Column (3) illustrates a marginally significant and positive relationship between anticipated spending on oneself and the probably of being in the August survey; an MK 1000 increase (approximately one standard deviation) in planned spending corresponds to a 0.06 percentage point increase in the probability of being surveyed in August. The p-value for the test that public and private winners with median anticipated spending on themselves have equal probabilities of being in the August survey is 0.18. The correlation between the probability of being surveyed in August and anticipated spending on the household is negative and marginally significant; we fail to reject the hypothesis that public and private lottery winners with median anticipated spending on their households have equal probabilities of being resurveyed.

While the small sample size, 26% attrition among respondents targeted for endline interviews, and overrepresentation of public lottery winners in the August sample are concerning, these results provide some reassurance that differential attrition is unlikely to drive results using data from the endline survey. There is not a statistically significant difference in the rate of attrition for public compared to private winners, and there is no evidence that anticipated spending of the prize money is correlated with the probability of attrition.

4 Analysis

Public distribution of windfall income potentially exposes recipients to greater redistributive pressure than private distribution of an equal-value transfer. Recipients can respond along three margins. The most commonly discussed margin is the intended beneficiary: those who receive public transfers may spend more of their windfall on others in their social network, in direct response to social pressure to share income. I investigate this hypothesis directly, by comparing spending on prize recipients themselves, members of their households, and others outside the household.

Another potential margin for adjustment is in the composition of spending. While any difference in the composition of spending by public and private winners is evidence that public information about income receipt constrains choices, we may expect specific responses to redistributive pressure. For example, public prize winners may purchases so-called merit goods, signaling that they are using their windfall responsibly or pro-socially. Or, they may purchase items that are hard to share or liquidate, in an attempt to evade pressure to share. If they anticipate difficulty in resisting pressure to share when they have cash on hand, public winners may purchase durables instead of saving in cash. Private winners may adjust their spending towards unobservable purchases. Because winners spend small amounts of

money on many different categories of goods, my study is likely underpowered to detect changes in the composition of spending. I do test for differential spending on seven mutually exclusive categories of purchases as described in the previous section. I include purchase of agricultural inputs such as fertilizer and pesticides, purchase of livestock, and purchase of building materials in the "investment" category. Results for analysis of these categories are not sensitive to alternative definitions of investment, such as removing livestock.

Finally, prize recipients can adjust the timing of their expenditures. While this margin has not received much attention in the literature about redistributive pressure, it may be important in a setting where sharing norms are asymmetric around cash versus other assets, and where close social ties make it difficult to maintain privacy about wealth in the long run. Randomizing whether raffle winners in my experiment received cash privately or in a public setting generates variation in the social pressure they initially face over sharing their windfall with others. Over time, however, information about the private lotteries may become public, as private winners either reveal information to others or are observed spending in excess of their usual habits. Therefore, spending money quickly – before others come to know about it – may be a strategy for controlling expenditures and maximizing private welfare. If spending money quickly allows public prize recipients to evade redistributive pressure, then we may observe a response on the timing margin and no change along the other margins.

To study timing, I aggregate spending by date: the same day as the raffle, within one week of the raffle, within the same month (in May), and in each of the three subsequent months. My primary measure of "immediate" spending is money spent within one week of the raffle, since the lotteries, surveys, and related activities occupied most of the day and gave prize recipients little time to spend. Also, market days happen once per week in most villages, so the week is a natural interval for measuring expenditure. Results are not sensitive to using the narrower same-day time frame.

For each set of outcomes, I run OLS regressions of the outcome on an indicator for whether the respondent received the prize in a public setting:

$$Y_{ic} = \alpha + \beta \text{Public}_i + \mathbf{X}_i + \epsilon_{ic} \tag{1}$$

Specifications include baseline measures of the variables included in the balance tests from Table 1 unless otherwise indicated, and standard errors are clustered at the club level. Since the sample is comprised entirely of raffle winners, the coefficient β measures the effect of receiving the prize in a public setting relative to in private. Results from specifications including club fixed effects are available in the Online Appendix.

5 Results

Table 4 compares the intended beneficiary of spending by public and private winners. Panel A reports anticipated spending by all 294 raffle winners on three populations: private consumption for themselves, public goods within their households or for other members of their households, and people outside the household. Private winners anticipate spending MK 762, or about 30 percent, of the prize on their own private consumption. Public winners anticipate an extra MK 157 of spending on themselves; the difference is not statistically significant. Private winners anticipate spending MK 1630 of their prize on household goods, or on consumption by other members of their household. This figure is lower by MK 184 for public winners, but the difference is not significant. Finally, private winners anticipate sharing MK 80, or three percent of the total windfall. Public winners anticipate sharing an extra MK 91, and though the difference is large relative to the mean for private winners, it is not statistically significant.

Panel B limits the analysis of anticipated spending to the subsample of 110 respondents who were subsequently resurveyed in August. Public and private winners in this subsample anticipate spending nearly identical amounts on themselves. Public winners anticipate slightly lower spending on their households and slightly higher spending on individuals outside of their households, but neither difference is statistically significant.

Panel C includes the same sample as Panel B, but uses data about realized expenditures, from the August survey. While private winners spent MK 1001, or 40 percent, of the windfall on themselves, public winners spend an additional MK 418 on private consumption. This difference is significant at the 95 percent confidence level. The increased private spending is offset somewhat by MK 287 less spent on household consumption, though that difference is not statistically significant. Private winners ultimately shared MK 188, nearly three times as much as they anticipated. There is no excess sharing by public winners; on average, they shared MK 14 less.

Note that limited income sharing in anticipation or ex post is not evidence against redistributive pressure if individuals are aware that they can evade such pressure. I test two possible margins for evasion – changes in the composition or timing of spending – in the subsequent tables. While any differences between the composition patterns of public and private winners indicates that income observability constrains consumption choices, recall that shifts away from holding liquid assets and towards more rapid spending are the hypothesized channels of evasion.

Table 5 reports estimates of the effect of public prize distribution on the composition of spending. The outcome variables are the amount of anticipated (realized) spending in each of seven categories; the percentage of winners who report any spending in each category

is reported beneath the estimates. For example, 63 percent of the 294 winners anticipated spending some of their prize on non durable goods. On average, those who won private lotteries anticipated spending MK 702 of their MK 2,500 windfall on non durables. Receiving the prize in public increased anticipated non durable spending by MK 20, a change that is neither economically nor statistically significant. In fact, only the amounts shared with others and saved or invested are affected by public information about the raffle prize. Only 10 percent of the total sample anticipates giving or lending money to others. However, the average effect of receiving the windfall in public, an increase of MK 62, is statistically different from zero and large relative to the mean of MK 32 among private winners. This result is of similar magnitude to the effect on spending on people outside the household reported in Table 4.

Twenty two percent of the sample anticipates having or investing some of their prize money. Public winners anticipate significantly lower savings than private winners, and the reduction of MK 153 is meaningful relative to the private winners' mean of MK 377. These findings are suggestive of redistributive pressure affecting some of the respondents. On average, receiving money in a public setting causes people to anticipate sharing more of it with others in their network, and to anticipate greater difficulty saving or investing their windfall.

While the effect sizes on anticipated spending in these two categories are similar when the sample is restricted to those 110 raffle winners who are resurveyed in August, as in Panel B, the standard errors of the estimates are 1.5 to two times as large. The effect on the amount to be shared remains marginally significant, and the reduction in anticipated saving is not significant at conventional levels in the subsample. The similarity of the private winners' means and stability of the point estimates of most coefficients between the full sample and the 110 households resurveyed in August does provide some additional reassurance that selective attrition does not drive results.

Finally, Panel C reports effects on realized spending, as measured in the August follow up survey. Only 9 percent of all respondents report saving prize money (perhaps because any short term savings had been depleted by August), and the difference between savings by private and public recipients is not significant. The difference in sharing by public and private winners has also vanished by August (as did the similar but not statistically significant effect using the alternate definition of sharing in Table 4). If anything, public winners shared somewhat less than private winners. Overall, 25 percent of August respondents shared some money compared to 15 percent of this subsample who anticipated sharing; both public and private winners shared more than anticipated. There are two statistically significant differences between public and private winners in realized expenditures, among the seven categories tested: public winners spend MK 220 less on health and education, and a corresponding amount more on other miscellaneous expenses, relative to private winners.

Table 6 reports total spending of the raffle income in three time windows: within a week of receipt, within a month of receipt, and in total. These estimates provide a test of the hypothesis that income observability causes windfall income recipients to adjust the timing of their spending. Recall that if income receipt will eventually become public – either because spending is observed, or because information is eventually disclosed and spread in small communities – then spending is a time-limited opportunity for evading social pressure to share.

Table 6 is structured slightly differently than the previous results to highlight robustness to the inclusion of baseline covariates. The first three columns refer to anticipated spending measured in the April survey, and columns (4) and (5) refer to realized spending, from the August survey.[4] Public winners anticipate spending more money immediately after receiving their prizes than do private winners; the difference of MK 236 (without covariates, column 1) is significant at the 95 percent confidence level. The magnitude of the result is robust to the inclusion of covariates (MK 227, column 2), though the coefficient is only significant at the 90 percent confidence level.

When the sample is limited to the 110 respondents reinterviewed in August, the magnitude of the difference in immediate spending is larger (MK 285, column 3) but, with less than half the original sample size, no longer significant at conventional levels. Similarly, the magnitude of the effect is stable in the realized data in Panel C, though the extra MK 310 (or MK 294, from specifications including covariates) spent by public winners in the week following the raffles is not statistically different from zero in the August survey subsample.

Note that the outcome variable in Table 6 is total spending, the sum of the six categories in Table 5, for comparability with other results. The effect of income observability is somewhat larger when savings are excluded. As reported in Appendix Table A1, the effect of public prize distribution is to increase anticipated spending in the first week by MK 333 (significant at the 95 percent confidence level) in the full sample or MK 383 (significant at the 90 percent confidence level) in the subsample. In the August survey, immediate spending is higher by MK 356 (MK 329, including covariates) by public winners than private winners.

The effect of income observability is less pronounced over a longer window after the windfall is distributed. Panel B reports the effect of public distribution of the windfall on spending in the month following the raffles. In the full sample, public winners anticipate spending MK 278 (MK 275, with covariates) more than private winners over this interval. The difference is smaller among those resurveyed in August, and neither the anticipated nor

[4]In principle, total anticipated spending reported in columns (1) to (3) of Panel C could extend beyond August. Total realized spending reported in columns (4) and (5) of Panel C is limited to expenditures between the raffle and the August survey. In practice, respondents account for virtually all of the MK 2,500 windfall, suggesting that the money was spent in full by the time the follow up survey was conducted.

the realized differences are statistically significant. The magnitude of the effect of income observability on spending a month after the raffles is one-half to one-third the effect on immediate spending, in the first week after the windfall. This is consistent with a time-limited opportunity to avoid social pressure to share income by making the money unavailable through spending.

5.1 Heterogeneity

Social pressure to share income may have differential effects that depend upon position in the community wealth distribution. One possibility is that social pressure to share income is opportunistic – exerted when the expected benefit is positive because the target is expected to have resources that can be redistributed. While wealthier individuals will always face greater pressure to share under this hypothesis, awarding money in public rather than secretly may disproportionately affect behavior of poorer individuals. Since wealthy individuals are always presumed to have money that could be shared, winning a sum that is small relative to permanent income or wealth (though meaningful relative to short term consumption) may not change the spending or sharing patterns of the wealthy. For poor individuals, however, the raffle may create a different social dynamic. In general, these individuals face less pressure to share simply because in expectation, they have less to contribute. If they receive windfall income in public, however, they are known to have liquidity, and therefore become targets for social pressure.

Land ownership is a proxy for long-term wealth. Therefore, I test for evidence of this sort of heterogeneity by estimating the effect of the public raffle treatment on winners whose land ownership is above the median for their farming club, compared to those whose land ownership is below their club median:[5]

$$Y_{ic} = \alpha + \beta_1 \text{Public}_i + \beta_2 \text{Above median land}_{ic} + \beta_3 \text{Public}_i \times \text{Above median land}_{ic} + \mathbf{X}_i + \epsilon_{ic} \quad (2)$$

The coefficient β_1 measures the effect of income observability on households with below-median land ownership. The difference between the effect of income observability on poorer and wealthier households is captured by β_3, and the total effect on wealthier households equals $\beta_1 + \beta_3$.

Table 8 reports estimates for equation (2), following the same format as Table 6. Public winners with below median land ownership anticipate spending significantly less the week after the lotteries than private winners. However, the effect of income observability on on wealthier winners is close to zero, and the difference between the effects on below- and above-

[5] I use baseline data from the full sample of club members, not just raffle winners, to calculate club medians.

median wealth winners is significant at the 90 percent confidence level in the full sample and the August resurvey subsample.

The realized effect of income observability on immediate spending is somewhat smaller and not statistically significant, though the same pattern of coefficients holds in columns (4) and (5) as in columns (1) to (3). As in Table 6, the effect of income observability dissipates over time. While the pattern of coefficients is the same for anticipated spending in the month after the raffle (Panel B) as in Panel A, neither treatment effects nor interaction terms are significant at conventional levels. Both poor and wealthy public raffle winners report slightly higher realized spending than private raffle winners.

There is no clear pattern to the results in Panel C. In the full sample, wealthy public winners anticipate the same average spending as private winners. Ex post, public winners report spending less by the time of the survey than private winners, but the effect of income observability is again completely offset (though in the opposite direction) for wealthy prize recipients. Higher marginal utility of consumption or lower discount rates for poor households cannot not explain these results, since both public and private raffle winners received the same windfall. Instead, the results are consistent with a model in which a modest windfall exposes poor households to redistributive pressure from which they are otherwise exempt, but does not affect the pressure faced by wealthier households.

6 Conclusion

Observed income-sharing is low for Malawian farmers who received $18 in windfall income, but the timing of expenditures depends on the observability of the prize. Those who received the prize in public – and consequently were exposed to greater pressure to share income – spent more of their money in the week immediately following the transfer than peers in the same communities whose prize was awarded secretly. In this experiment, subjects may have spent their windfall quickly to evade sharing obligations. Previous studies have documented that sharing norms can affect investment (Jakiela & Ozier 2016) and consumption (Kinnan 2014, Boltz, Marazyan & Villar 2015), and this study adds evidence that such pressure may change the timing of consumption even when it does not shift its composition.

There is suggestive evidence of opportunistic social pressure that responds to the expected availability of funds. First, social pressure in this experiment is triggered by the observability of income. Second, the pressure generated by public information has a bigger effect on expenditure timing and private consumption for poor individuals, who may face increased pressure to share when they are known to have cash compared to periods when they are less likely to have resources to share. In Malawi, many payments, especially those that target

poor households, are easily observable. Wages for employment and the national public works scheme are made via highly visible "pay parades." Agricultural clubs often disburse loans or proceeds from cash crops sold through club accounts in group meetings. These results suggest that the information environment for payments is a constraint to the timing of expenditures, so changes in payments, including utilizing mobile money to increase privacy without increasing transaction costs, may be welfare improving.

References

Ashraf, Nava. 2009. "Spousal Control and Intra-Household Decision Making: An Experimental Study in the Philippines." *American Economic Review*, 99(4): 1245–1277.

Baland, Jean-Marie, Catherine Guirkinger, and Charlotte Mali. 2011. "Pretending to Be Poor: Borrowing to Escape Forced Solidarity in Cameroon." *Economic Development and Cultural Change*, 60(1): 1–16.

Boltz, Marie, Karine Marazyan, and Paola Villar. 2015. "Income Hiding and Informal Redistribution: A Lab-in-the-Field Experiment in Senegal." Working Paper, Paris School of Economics.

Castilla, Carolina, and Thomas Walker. 2013. "Is Ignorance Bliss? The Effect of Asymmetric Information between Spouses on Intra-Household Allocations." *American Economic Review: Papers and Proceedings*, 103(3): 263–268.

Comola, Margherita, and Marcel Fafchamps. 2010. "Are Gifts and Loans between Households Voluntary?" *Centre for the Study of African Economies Working Paper Series*, No. 20.

Foster, George M. 1965. "Peasant Society and the Image of Limited Good." *American Anthropologist*, 67(2): 293–315.

Gine, Xavier, Jessica Goldberg, and Dean Yang. 2016. "Credit Market Consequences of Improved Personal Identification: Field Experimental Evidence from Malawi." *American Economic Review*, 8(1): 129–149.

Jakiela, Pamela, and Owen Ozier. 2016. "Does Africa Need a Rotten Kin Theorem? Experimental Evidence from Village Economies." *Review of Economic Studies*, 83(1): 231–268.

Kinnan, Cynthia. 2014. "Distinguishing Barriers to Insurance in Thai Villages." Working Paper, Northwestern University.

Ligon, Ethan, Jonathan Thomas, and Tim Worrall. 2002. "Informal Insurance Arrangements with Limited Commitment: Theory and Evidence from Village Economies." *Review of Economic Studies*, 69(1): 209–244.

Lund, Susan, and Marcel Fafchamps. 2003. "Risk-Sharing Networks in Rural Philippines." *Journal of Development Economics*, 71(2): 261–287.

Maranz, David. 2001. *African Friends and Money Matters: Observations from Africa.* Vol. 37 of *Publications in Ethnography*, SIL International.

Platteau, Jean-Phillippe. 2000. *Institutions, Social Norms, and Economic Development. Fundamentals of Development Economics*, London and New York:Routledge.

Townsend, Robert M. 1994. "Risk and Insurance in Village India." *Econometrica*, 62(3): 539–591.

Udry, Chris. 1994. "Risk and Insurance in a Rural Credit Market: An Empirical Investigation in Northern Nigeria." *Review of Economic Studies*, 63: 495–526.

Tables

Table 1: Summary statistics and balance tests

	Public	Private	P-value: Public v.s. Private
Panel A: All winners in April			
Male	0.945	0.926	0.498
	(0.019)	(0.022)	
Age	43.589	44.919	0.388
	(1.122)	(1.052)	
Years of education	5.932	6.142	0.615
	(0.312)	(0.278)	
Land owned (acres)	6.697	6.983	0.706
	(0.462)	(0.600)	
HH size	5.877	5.791	0.713
	(0.166)	(0.164)	
Number of Children	1.596	1.601	0.971
	(0.106)	(0.107)	
House quality score (PCA)	0.071	-0.005	0.525
	(0.087)	(0.082)	
inaugustsurvey	0.404	0.345	0.293
	(0.041)	(0.039)	
N	146	148	
Panel B: Winners in follow-up sample			
Male	0.949	0.941	0.856
	(0.029)	(0.033)	
Age	44.559	45.549	0.702
	(1.863)	(1.752)	
Years of education	5.610	5.765	0.826
	(0.476)	(0.517)	
Land owned (acres)	6.890	7.088	0.858
	(0.593)	(0.970)	
HH size	5.814	5.804	0.979
	(0.242)	(0.279)	
Number of Children	1.661	1.549	0.645
	(0.165)	(0.178)	
House quality score (PCA)	-0.012	0.012	0.899
	(0.130)	(0.143)	
N	59	51	

Table 2: Test of differential attrition

	In follow-up	Not in follow-up	P-value: differential attrition
Panel A: All winners in April			
Public	0.536	0.473	0.293
	(0.048)	(0.037)	
Male	0.945	0.929	0.588
	(0.022)	(0.019)	
Age	45.018	43.804	0.446
	(1.283)	(0.960)	
Years of education	5.682	6.250	0.188
	(0.349)	(0.259)	
Land owned (acres)	6.982	6.756	0.774
	(0.548)	(0.510)	
HH size	5.809	5.848	0.873
	(0.182)	(0.152)	
Number of Children	1.609	1.592	0.914
	(0.121)	(0.096)	
House quality score (PCA)	-0.001	0.053	0.666
	(0.096)	(0.077)	
N	110	184	
Panel B: Winners in resurveyed clubs			
Public	0.536	0.421	0.223
	(0.048)	(0.081)	
Male	0.945	0.921	0.590
	(0.022)	(0.044)	
Age	45.018	42.421	0.284
	(1.283)	(1.753)	
Years of education	5.682	6.684	0.130
	(0.349)	(0.482)	
Land owned (acres)	6.982	7.683	0.555
	(0.548)	(1.251)	
HH size	5.809	6.211	0.274
	(0.182)	(0.329)	
Number of Children	1.609	2.237	0.014
	(0.121)	(0.251)	
House quality score (PCA)	-0.001	0.116	0.547
	(0.096)	(0.178)	
N	110	38	

Table 3: Correlation between anticipated spending and attrition

Dependent variable: In August survey	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Anticipated spending in 1st week	0.003	0.004						
	(0.003)	(0.005)						
Public * Anticipated spending in 1st week		-0.003						
		(0.007)						
Anticipated spending on self			0.006*	0.008*				
			(0.003)	(0.005)				
Public * Anticipated spending on self				-0.005				
				(0.007)				
Anticipated spending on household					-0.006*	-0.008*		
					(0.003)	(0.005)		
Public * Anticipated spending on household						0.004		
						(0.007)		
Anticipated spending on non-household							0.011	0.009
							(0.012)	(0.024)
Public * Anticipated spending on non-household								-0.001
								(0.028)
Public		0.132		0.127		0.015		0.082
		(0.145)		(0.095)		(0.122)		(0.076)
Observations	148	148	148	148	148	148	148	148
R-squared	0.01	0.01	0.02	0.03	0.02	0.03	0.01	0.01
p-value: public vs private at median anticipated spending		0.49		0.18		0.23		0.28
Median anticipated spending (100 MKW)	25.00	25.00	1.00	1.00	17.50	17.50	0.00	0.00

Note: Sample includes clubs resurveyed in August. Anticipated spending is in 100 MKW.

Table 4: Effect of income observability on beneficiary of spending

Dependent variable:	(1) Self	(2) Household	(3) Non Household
Panel A: Anticipated (all winners)			
Public	157.244	-183.998	90.876
	(116.568)	(121.854)	(75.907)
Observations	294	294	294
R-squared	0.05	0.05	0.04
Mean of dep. var.	761.62	1630.47	79.59
SD of dep. var.	1025.11	1070.28	308.06
Dep. var is non-zero	0.47	0.77	0.14
Panel B: Anticipated (resurveyed winners)			
Public	-3.993	-100.500	82.208
	(201.321)	(205.927)	(59.990)
Observations	110	110	110
R-squared	0.06	0.08	0.09
Mean of dep. var.	1000.59	1451.96	65.10
SD of dep. var.	1126.77	1127.37	238.26
Dep. var is non-zero	0.54	0.73	0.15
Panel C: Realized			
Public	417.549**	-291.318	-14.332
	(185.468)	(183.402)	(88.959)
Observations	110	110	110
R-squared	0.09	0.12	0.02
Mean of dep. var.	1001.37	1094.12	188.24
SD of dep. var.	1042.23	1071.10	474.40
Dep. var is positive	0.70	0.62	0.20

"Self" refers to private consumption by the raffle winner. "Household" includes public goods within the winner's household and private consumption of other HH members. "Non household" is money spent for or given to individuals outside the winner's household. Data include spending from the MK 2,500 windfall only. Panel A includes all raffle winners and uses data from the April survey. Panel B is restricted to raffle winners who are subsequently resurveyed in August. Panel C uses data from the August survey. All regressions include the baseline variables reported in Table 1 and 2. OLS regressions. Robust standard errors are clustered at the village level. * p<0.10, ** p<0.05, *** p<0.001.

Table 5: Effect of income observability on composition of spending

Dependent variable:	(1) Non Durable (including food)	(2) Durable (including clothes)	(3) Health and education	(4) Investment (including farm inputs, business)	(5) Sharing (including loans and gifts	(6) Saving	(7) Other and uncategorized
Panel A: Anticipated (all winners)							
Public	20.439	7.163	10.037	62.014	61.878**	-152.836**	55.429
	(91.644)	(62.998)	(81.916)	(107.837)	(26.468)	(69.681)	(38.724)
Observations	294	294	294	294	294	294	294
R-squared	0.01	0.03	0.05	0.05	0.05	0.05	0.04
Mean of dep. var.	701.55	202.50	220.27	873.92	31.42	376.82	65.20
SD of dep. var.	794.95	512.45	501.39	989.94	165.50	722.71	204.18
Dep. var is non-zero	0.63	0.19	0.21	0.52	0.10	0.22	0.13
Panel B: Anticipated (resurveyed winners)							
Public	169.046	17.584	-99.735	-137.224	88.137*	-152.294	92.199
	(156.984)	(105.762)	(73.804)	(173.437)	(52.185)	(114.654)	(76.806)
Observations	110	110	110	110	110	110	110
R-squared	0.05	0.05	0.06	0.10	0.11	0.08	0.10
Mean of dep. var.	665.29	219.61	234.90	901.37	62.75	372.94	60.78
SD of dep. var.	730.34	509.91	418.37	1004.34	258.43	724.70	224.57
Dep. var is non-zero	0.64	0.21	0.23	0.49	0.15	0.23	0.11
Panel C: Realized							
Public	-48.742	68.664	-220.267**	52.378	-51.734	27.445	220.252**
	(181.206)	(75.631)	(106.582)	(173.868)	(79.602)	(113.552)	(95.480)
Observations	110	110	110	110	110	110	110
R-squared	0.07	0.05	0.15	0.05	0.04	0.04	0.08
Mean of dep. var.	841.96	168.63	354.71	617.84	205.49	150.98	55.88
SD of dep. var.	907.48	365.78	680.74	875.65	468.55	546.40	253.50
Dep. var is positive	0.61	0.23	0.23	0.44	0.25	0.08	0.14

See Table 4 for notes.

Table 6: Effect of income observability on timing of spending

Dependent variable:	(1) Anticipated	(2) Anticipated	(3) Anticipated	(4) Realized	(5) Realized
Panel A: Within a week					
Public	236.097**	226.521*	285.169	310.226	294.497
	(113.878)	(115.902)	(200.164)	(190.147)	(203.960)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.01	0.04	0.07	0.02	0.05
Mean of dep. var.	1815.07	1815.07	1715.29	1073.33	1073.33
SD of dep. var.	940.88	940.88	1007.05	1081.73	1081.73
Dep. var is non-zero	0.89	0.89	0.87	0.68	0.68
Panel B: Within a month					
Public	278.367**	275.393**	166.082	193.659	166.537
	(87.632)	(88.279)	(152.066)	(208.786)	(214.302)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.03	0.04	0.02	0.01	0.05
Mean of dep. var.	2160.81	2160.81	2199.61	1831.76	1831.76
SD of dep. var.	722.29	722.29	680.87	1057.82	1057.82
Dep. var is non-zero	0.97	0.97	0.96	0.84	0.84
Panel C: Total					
Public	62.215	64.122	-22.286	53.662	47.996
	(67.031)	(67.281)	(105.714)	(96.081)	(100.309)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.00	0.03	0.04	0.00	0.03
Mean of dep. var.	2471.69	2471.69	2517.65	2395.49	2395.49
SD of dep. var.	269.81	269.81	141.00	578.67	578.67
Dep. var is positive	0.99	0.99	0.98	0.97	0.97

Outcome is total spending in the interval following the raffle. Total savings is equal to the sum of the categories included in Table 5.
Data in columns (1)-(3) come from the April survey conducted immediately after the lotteries, and refer to anticipated spending in the next week. Data in columns (4) and (5) come from the follow up survey administered in a subset of villages in August, and are respondents' recollection of their actual spending in the week after the raffle. The sample in columns (1) and (2) includes all raffle winners surveyed at baseline. The sample in columns (3) to (5) includes only those winners resurveyed at endline. When covariates are included, they are the variables included in Table 1. OLS regressions. Robust standard errors are clustered at the village level. * p<0.10, ** p<0.05, *** p<0.001.

Table 7: Heterogeneous effects of income observability on composition of spending

Dependent variable:	(1) Non Durable (including food)	(2) Durable (including clothes)	(3) Health and education	(4) Investment (including farm inputs, business)	(5) Sharing (including loans and gifts)	(6) Saving	(7) Other and uncategorized
Panel A: Anticipated (all winners)							
Public	250.264	-93.761	226.074	-102.992	6.915	0.974	44.986
	(226.151)	(163.950)	(318.035)	(237.499)	(44.886)	(133.011)	(35.341)
Public * Land above median	-293.023	126.606	-276.090	211.610	70.523	-195.555	13.561
	(253.783)	(169.130)	(330.317)	(266.607)	(57.943)	(159.618)	(55.897)
Observations	294	294	294	294	294	294	294
R-squared	0.02	0.04	0.06	0.06	0.05	0.05	0.04
Mean of dep. var.	701.55	202.50	220.27	873.92	31.42	376.82	65.20
SD of dep. var.	794.95	512.45	501.39	989.94	165.50	722.71	204.18
Dep. var is positive	0.63	0.19	0.21	0.52	0.10	0.22	0.13
Panel B: Anticipated (resurveyed winners)							
Public	568.484**	-294.571	-250.294*	176.771	31.605	-235.781	-40.116
	(259.701)	(301.687)	(148.398)	(361.164)	(109.992)	(230.825)	(78.399)
Public * Land above median	-522.905	413.231	195.903	-406.876	74.715	105.147	168.487
	(336.749)	(316.151)	(189.688)	(419.998)	(133.674)	(288.634)	(159.624)
Observations	110	110	110	110	110	110	110
R-squared	0.06	0.10	0.07	0.11	0.11	0.07	0.11
Mean of dep. var.	665.29	219.61	234.90	901.37	62.75	372.94	60.78
SD of dep. var.	730.34	509.91	418.37	1004.34	258.43	724.70	224.57
Dep. var is positive	0.64	0.21	0.23	0.49	0.15	0.23	0.11
Panel C: Realized							
Public	-970.991**	295.770	-142.380	311.892	-38.234	405.842	41.537
	(331.930)	(226.536)	(158.326)	(330.264)	(185.087)	(246.492)	(203.499)
Public * Land above median	1207.539**	-291.308	-106.128	-346.600	-21.992	-552.235**	232.868
	(399.593)	(243.511)	(188.072)	(413.513)	(212.006)	(268.575)	(244.798)
Observations	110	110	110	110	110	110	110
R-squared	0.12	0.07	0.16	0.05	0.02	0.07	0.09
Mean of dep. var.	841.96	168.63	354.71	617.84	205.49	200.00	55.88
SD of dep. var.	907.48	365.78	680.74	875.65	468.55	637.18	253.50
Dep. var is positive	0.61	0.23	0.23	0.44	0.25	0.09	0.14

See notes for Table 4. "Above club median (land owned)" is an indicator that equals 1 when a respondent's land owned is above the median calculated for all surveyed individuals in his/her farming club, including those who did not win raffle prizes.

Table 8: Heterogeneous effects of income observability on timing of spending

Dependent variable:	(1) Anticipated	(2) Anticipated	(3) Anticipated	(4) Realized	(5) Realized
Panel A: Within a week					
Public	708.000**	708.088**	883.221**	518.269	425.487
	(319.327)	(317.961)	(367.064)	(423.944)	(424.023)
Public * Land above median	-593.833*	-606.691*	-783.165*	-266.859	-169.082
	(345.236)	(341.018)	(467.305)	(474.164)	(474.561)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.01	0.04	0.07	0.02	0.05
Mean of dep. var.	1815.07	1815.07	1715.29	1073.33	1073.33
SD of dep. var.	940.88	940.88	1007.05	1081.73	1081.73
Dep. var is non-zero	0.89	0.89	0.87	0.68	0.68
Panel B: Within a month					
Public	573.208**	574.567**	358.026	172.692	67.581
	(276.831)	(281.872)	(216.708)	(397.056)	(423.772)
Public * Land above median	-375.297	-382.884	-247.395	25.719	126.260
	(290.971)	(299.208)	(313.143)	(437.455)	(475.213)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.03	0.04	0.02	0.01	0.05
Mean of dep. var.	2160.81	2160.81	2199.61	1831.76	1831.76
SD of dep. var.	722.29	722.29	680.87	1057.82	1057.82
Dep. var is non-zero	0.97	0.97	0.96	0.84	0.84
Panel C: Total					
Public	328.333	332.460	-43.902	-70.256	-105.680
	(238.465)	(240.837)	(69.763)	(51.783)	(98.384)
Public * Land above median	-338.833	-342.368	27.703	161.394	199.650
	(244.334)	(249.198)	(173.953)	(129.349)	(133.226)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.02	0.05	0.04	0.01	0.04
Mean of dep. var.	2471.69	2471.69	2517.65	2395.49	2395.49
SD of dep. var.	269.81	269.81	141.00	578.67	578.67
Dep. var is positive	0.99	0.99	0.98	0.97	0.97

See notes for Table 6. "Above club median (land owned)" is an indicator that equals 1 when a respondent's land owned is above the median calculated for all surveyed individuals in his/her farming club, including those who did not win raffle prizes.

Online Appendix A (not for publication)

Table A1: Effect of income observability on timing of spending (excluding saving)

Dependent variable:	(1) Anticipated	(2) Anticipated	(3) Anticipated	(4) Realized	(5) Realized
Panel A: Within a week					
Public	349.933**	332.716**	383.332*	356.088*	328.919
	(116.884)	(118.021)	(197.271)	(191.846)	(200.472)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.03	0.08	0.09	0.03	0.07
Mean of dep. var.	1815.07	1815.07	1715.29	1073.33	1073.33
SD of dep. var.	940.88	940.88	1007.05	1081.73	1081.73
Dep. var is positive	0.89	0.89	0.87	0.68	0.68
Panel B: Within a month					
Public	378.858***	362.990***	224.094	231.047	192.934
	(102.734)	(104.782)	(165.815)	(220.117)	(218.850)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.04	0.07	0.04	0.01	0.09
Mean of dep. var.	1909.12	1909.12	2005.49	1743.53	1743.53
SD of dep. var.	865.66	865.66	811.66	1093.50	1093.50
Dep. var is positive	0.95	0.95	0.95	0.82	0.82
Panel C: Total					
Public	230.786**	216.959**	130.008	35.151	20.551
	(94.869)	(95.846)	(154.476)	(147.427)	(144.825)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.02	0.06	0.03	0.00	0.04
Mean of dep. var.	2094.86	2094.86	2144.71	2244.51	2244.51
SD of dep. var.	749.75	749.75	724.75	775.38	775.38
Dep. var is positive	0.97	0.97	0.96	0.94	0.94

Outcome is total spending, excluding savings, in the interval following the raffle. Data in columns (1)-(3) come from the April survey conducted immediately after the lotteries, and refer to anticipated spending in the next week. Data in columns (4) and (5) come from the follow up survey administered in a subset of villages in August, and are respondents' recollection of their actual spending in the week after the raffle. The sample in columns (1) and (2) includes all raffle winners surveyed at baseline. The sample in columns (3) to (5) includes only those winners resurveyed at endline. When covariates are included, they are the variables included in Table 1. OLS regressions. Robust standard errors are clustered at the village level. * p<0.10, ** p<0.05, *** p<0.001.

Table A2: Effect of income observability on beneficiary of spending (within club)

Dependent variable:	(1) Self	(2) Household	(3) Non Household
Panel A: Anticipated (all winners)			
Public	199.631	-173.016	21.156
	(180.763)	(191.012)	(54.462)
Observations	294	294	294
R-squared	0.57	0.59	0.89
Mean of dep. var.	761.62	1630.47	79.59
SD of dep. var.	1025.11	1070.28	308.06
Dep. var is non-zero	0.47	0.77	0.14
Panel B: Anticipated (resurveyed winners)			
Public	65.556	-32.246	27.908
	(406.561)	(474.392)	(136.052)
Observations	110	110	110
R-squared	0.74	0.73	0.78
Mean of dep. var.	1000.59	1451.96	65.10
SD of dep. var.	1126.77	1127.37	238.26
Dep. var is non-zero	0.54	0.73	0.15
Panel C: Realized			
Public	598.787*	-377.113	-17.097
	(327.527)	(380.670)	(201.016)
Observations	110	110	110
R-squared	0.86	0.82	0.69
Mean of dep. var.	1001.37	1090.20	192.16
SD of dep. var.	1042.23	1074.80	475.33
Dep. var is non-zero	0.70	0.61	0.20

"Self" refers to private consumption by the raffle winner. "Household" includes public goods within the winner's household and private consumption of other HH members. "Non household" is money spent for or given to individuals outside the winner's household. Data include spending from the MK 2,500 windfall only. Panel A includes all raffle winners and uses data from the April survey. Panel B is restricted to raffle winners who are subsequently resurveyed in August. Panel C uses data from the August survey. All regressions include the baseline variables reported in Table 1 and 2. OLS regressions. All specifications include club fixed effects. Robust standard errors are clustered at the village level.
* p<0.10, ** p<0.05, *** p<0.001.

Table A3: Heterogeneous effects of income observability on composition of spending (within club)

Dependent variable:	(1) Non Durable (including food)	(2) Durable (including clothes)	(3) Health and education	(4) Investment (including farm inputs, business)	(5) Sharing (including loans and gifts)	(6) Saving	(7) Other and uncategorized
Panel A: Anticipated (all winners)							
Public	71.736	-16.464	-30.050	78.163	49.011	-166.511	61.886
	(140.238)	(99.072)	(75.741)	(165.390)	(37.715)	(113.075)	(62.988)
Observations	294	294	294	294	294	294	294
R-squared	0.58	0.52	0.84	0.63	0.62	0.58	0.56
Mean of dep. var.	701.55	202.50	220.27	873.92	31.42	376.82	65.20
SD of dep. var.	794.95	512.45	501.39	989.94	165.50	722.71	204.18
Dep. var is non-zero	0.63	0.19	0.21	0.52	0.10	0.22	0.13
Panel B: Anticipated (resurveyed winners)							
Public	201.868	-12.568	-77.397	-50.220	102.212	-183.820	81.141
	(428.050)	(253.743)	(182.329)	(422.822)	(130.113)	(272.409)	(230.469)
Observations	110	110	110	110	110	110	110
R-squared	0.72	0.76	0.70	0.76	0.76	0.77	0.73
Mean of dep. var.	665.29	219.61	234.90	901.37	62.75	372.94	60.78
SD of dep. var.	730.34	509.91	418.37	1004.34	258.43	724.70	224.57
Dep. var is non-zero	0.64	0.21	0.23	0.49	0.15	0.23	0.11
Panel C: Realized							
Public	-108.320	-52.607	-176.273	203.624	-14.390	-158.082	343.378
	(441.312)	(92.292)	(268.753)	(375.195)	(197.237)	(336.593)	(267.835)
Observations	110	110	110	110	110	110	110
R-squared	0.75	0.88	0.67	0.78	0.69	0.64	0.70
Mean of dep. var.	841.96	168.63	354.71	617.84	205.49	200.00	55.88
SD of dep. var.	907.48	365.78	680.74	875.65	468.55	637.18	253.50
Dep. var is non-zero	0.61	0.23	0.23	0.44	0.25	0.09	0.14

All regressions include club fixed effects. See Table 4 for additional notes.

Table A4: Effect of income observability on timing of spending (within club)

Dependent variable:	(1) Anticipated	(2) Anticipated	(3) Anticipated	(4) Realized	(5) Realized
Panel A: Within a week					
Public	195.182	207.524	162.629	306.216	302.112
	(157.926)	(172.939)	(475.185)	(378.172)	(473.677)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.64	0.66	0.78	0.75	0.77
Mean of dep. var.	1815.07	1815.07	1715.29	1073.33	1073.33
SD of dep. var.	940.88	940.88	1007.05	1081.73	1081.73
Dep. var is non-zero	0.89	0.89	0.87	0.68	0.68
Panel B: Within a month					
Public	253.431**	271.331**	337.842	101.892	56.269
	(105.967)	(115.401)	(369.578)	(448.413)	(552.117)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.74	0.76	0.76	0.59	0.66
Mean of dep. var.	2160.81	2160.81	2199.61	1831.76	1831.76
SD of dep. var.	722.29	722.29	680.87	1057.82	1057.82
Dep. var is non-zero	0.97	0.97	0.96	0.84	0.84
Panel C: Total					
Public	33.139	47.771	61.217	126.216	133.045
	(65.049)	(75.490)	(263.711)	(225.672)	(289.417)
Baseline controls		X	X		X
Observations	294	294	110	110	110
R-squared	0.81	0.83	0.73	0.54	0.59
Mean of dep. var.	2471.69	2471.69	2517.65	2395.49	2395.49
SD of dep. var.	269.81	269.81	141.00	578.67	578.67
Dep. var is positive	0.99	0.99	0.98	0.97	0.97

Outcome is total spending in the interval following the raffle. Total savings is equal to the sum of the categories included in Table 5.
Data in columns (1)-(3) come from the April survey conducted immediately after the lotteries, and refer to anticipated spending in the next week. Data in columns (4) and (5) come from the follow up survey administered in a subset of villages in August, and are respondents' recollection of their actual spending in the week after the raffle. The sample in columns (1) and (2) includes all raffle winners surveyed at baseline. The sample in columns (3) to (5) includes only those winners resurveyed at endline. When covariates are included, they are the variables included in Table 1. OLS regressions. All specifications include club fixed effects. Robust standard errors are clustered at the village level.
* p<0.10, ** p<0.05, *** p<0.001.

Online Appendix B (not for publication)

Directions for Public Lottery

First, read the following statement to the group: *Everyone at todays meeting can enter a drawing for a chance to win a prize of MK 2500. You don't have to enter the drawing, but you can if you want to. If you are the winner, the money is yours to do anything you want with it. The risk to you for participating in the lottery is that if you win, people will know you have money. Just like any other time that people know you have money, they could ask you for some of the money, try to steal it from you, or use witchcraft or some other method to get the money.*[6]

Next, walk around with the bag with pieces of paper, held closed and above eye level. Everyone who wants to be entered in the raffle should take one piece. When everyone has a piece of paper, tell them to open their paper. The person whose piece of paper has the star is the winner. That person should come to the front. You hand MK 2500 to that person, and have him sign a receipt.

Directions for Private Lottery

We have designated a "private lottery winner" and an alternate in advance. If the "private lottery winner" is the same person who won the public lottery, then the alternate becomes the "private lottery winner." Similarly, if the designated private lottery winner is not present, then the alternate becomes the private lottery winner.

Keep the "lottery questionnaires" out of view. Begin each questionnaire by asking the persons name. When the public lottery winner comes for his turn to complete the survey, administer the lottery questionnaire as well as the main questionnaire. Be sure that the public lottery winner does NOT see that there are two lottery questionnaires and two receipts, and that no one else in the group sees the receipts or questionnaires at all.

When the private lottery winner comes, read him the following statement BEFORE asking any of the survey questions on the baseline OR lottery questionnaire:

I have a surprise for you. Are you ready to hear it? We gave away MK 2500 in the lottery that we held with the group. We also held a secret lottery that no one knows about. You were the winner of that lottery. You also get MK 2500. No one else knows that there was a second lottery or that you won any money today. There was only one secret lottery you are the only other person to win money today. I will not tell anyone that you won money, and no one can see or hear us. You can keep it a secret or tell other people; its up to you. The risk to

[6]This list of potential risks to participants, including witchcraft, was specifically required by the IRB Committee at the University of Michigan.

you of taking the money is that even if you don't tell anyone, someone could find out, such as by noticing that you are spending a lot of money. If someone finds out you have money they didn't know about, they could be angry with you. If you dont want to take the money, you can say "no" right now. I wont give the money to anyone else if you turn it down, and no one will know that you turned it down.

Give the private lottery winner MK 2500. Have him sign a receipt. Ask him the questions from the lottery questionnaire after completing the main questionnaire.