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On the Fungibility of Spending and Earnings

Evidence from Rural China and Tanzania

Luc Christiaensen
Lei Pan

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Abstract

A common behavioral assumption of micro-economic theory is that income is fungible. Using household panel data from rural China and Tanzania, this study finds however that people are more likely to spend unearned income on less basic consumption goods such as alcohol and tobacco, non-staple food, transportation and communication, and clothing, while they are somewhat more likely to spend earned income on basic consumption goods such as staple food, and invest it in education. This resonates with the widespread cultural notion that money that is easily earned is also more easily spent. Cognitively, the results could be understood within the context of emotional accounting, whereby people classify income based on the emotions it evokes, prompting them to spend hard earned money more wisely to mitigate the negative connotations associated with its acquisition. The policy implications are real, bearing for example on the choice between employment guarantee schemes and cash transfers in designing social security programs.

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On the Fungibility of Spending and Earnings - Evidence from Rural China and Tanzania

Luc Christiaensen and Lei Pan[1]

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[1] Luc Christiaensen (lchristiaensen@worldbank.org) is a Senior Economist in the Chief Economist Office of the Africa Region of the World Bank. Lei Pan is an Assistant Professor in the Development Economics Department at Wageningen University. The authors would like to thank Erwin Bulte (Wageningen University), Erik Jonasson (Lund University), Will Martin (World Bank) and seminar participants at the UNU-WIDER conference on Behavioral Economics and Poverty, Helsinki, September 1-2, 2011 for insightful comments. Funding from JICA and DFID and collaboration with the Research on Poverty Analysis (REPOA) institute on the Tanzanian data collection is gratefully acknowledged, as is the assistance provided by the Chinese authorities of the World Bank's Western Poverty Reduction Project in China (WPRP), Wang Pingping, Assistant Counsel, Department of Rural Surveys of the National Bureau of Statistics of China, and Sari Soderstrom, World Bank Task Manager of the WPRP in providing the data for the China case study. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the views of the International Bank for Reconstruction and Development/World Bank and its affiliated organizations, or those of the Executive Directors or the governments they represent.

1 Introduction

A common behavioral assumption of micro-economic theory is that income is fungible. Consumption behavior does not depend on how income has been obtained in this view, but only on its total amount. In technical terms, the marginal propensity to consume (MPC) is independent of the source of income. Building on insights from cognitive psychology, a growing body of literature from behavioral economics challenges this assumption.[2] It is argued that people compartmentalize their income into different mental accounts and that they decide on their consumption within each of these accounts (Thaler, 1985, 1990). This creates a direct link between spending behavior and the source of income and is in sharp contrast with the standard consumption model, where consumption decisions are integrated into one single optimization problem and income is in effect treated as fungible.

Mental accounting has been invoked to clarify a wide array of otherwise difficult to explain spending behaviors, such as the inclination to spend small and to save large unanticipated windfalls and transfers (Shefrin and Thaler, 1981 and 1988), the disproportionate spending from tax rebates (Epley and Gneezy, 2007) and coupons (Milkman and Beshears, 2009; Hsieh, Satoshi and Hiro, 2010), the time contiguity in consumer-borrowing decisions (Hirst, Joyce and Schadewald, 1994) and the differences in investment or asset portfolio choices (Choi, Laibson and Madrian, 2009) [3]. Mental accounting is also increasingly referred to to help understand differences in spending of remittances on consumption (e.g. food) versus investment goods (e.g. education, housing) (Davies, Easaw, and Ghoshray, 2009).

One example of mental accounts that has received particular attention lately, especially in the context of current (as opposed to intertemporal) consumption portfolio allocation, is the 'flypaper' or 'labeling' effect. Kooreman (2000) finds for example that in the Netherlands the MPC of child clothing out of exogenous child benefits is substantially larger than the MPC of child clothing out of other income sources.[4] In this view, people change their consumption

[2] To be clear, the longstanding permanent income hypothesis also generates a link between a consumer's assessment of its income (anticipated or not) and its consumption behavior, with unanticipated, transitory income gains being saved and anticipated income gains, being spent. However, the focus here is on contemporaneous (as opposed to intertemporal) consumption portfolio allocation, abstracting from spending on consumer durables which also constitutes a form of saving, as discussed further below.

[3] These authors observed for example differences in employees' 401(k) contributions depending on the framing of the match-allocations by their employers, which they could only explain by reference to mental accounting.

[4] Similarly, recent studies of school feeding (Jacoby 2002) and supplementary nutrition programmes (Islam and Hoddinott, 2009) find that a substantial part of the supplementary feeding 'sticks' with the targeted child (like a flypaper). Because these transfers are inframarginal, parents would be expected to reallocate the transfers away from the child.

behavior in line with the suggestion of the label.

Other intrinsic motives that have been advanced to explain why and how people create mental accounts in addition to the desire for compliance with externally imposed labels include self-control, cognitive limitations, and reciprocity. Shefrin and Thaler (1981, 1988) conjecture that individuals maintain different accounts to which they assign different MPCs as a self-control device. In particular, mental accounting helps people resist overspending (especially in case of large windfalls)[5] and maximize their intertemporal utility by reducing the pain (utility loss) of the willpower effort needed to overcome the temptation of immediate overindulgence. Others posit that people engage in mental accounting to help them overcome the complexity of updating their life time income earnings given limited cognitive capacity (Read, Lowenstein, and Rabin, 1999; Hsieh 2003). Gratitude and the desire to reciprocate have been highlighted by Rabin (1993) as another reason for mental accounting.

Here, the focus is on a form of coding which has received much less attention in the literature so far, i.e. the coding of income based on the effort involved in obtaining it.[6] As observed by Henderson and Peterson (1992), people are more likely to purchase a vacation when they receive $2,000 as a gift than as a work bonus and they are more likely to purchase frivolous goods with winnings from a football betting pool than with an equivalent amount in overtime pay (O' Curry, 1997). The notion that money that is earned more easily, is also spent more easily, is in effect deeply culturally embedded, as exemplified by the expression 'Easy come, easy go', an expression, which finds its counterpart across the world's languages—'Как нажито, так и прожито' (Russian), 'Lai de rong yi, qu de kuai' (Chinese), 'Bekelalu Yemta Bekalau Yehedal' (Amharic, Ethiopia)".[7] That there might be a potential link between spending and earning depending on the efforts involved in obtaining the income should thus not come as a surprise. It is the limited attention paid to it so far, that is somewhat surprising.

This raises important questions about the possible psychological foundations of this form of mental accounting and its implications for policymaking. The notion of emotional accounting, advanced by Levav and McGraw (2009) as a variant of mental accounting, is particularly insightful in reflecting on the first question. In their view, people categorize their income based on the feelings this evokes, which may subsequently exert a substantial

[5] Small transfers/windfalls are then mentally assigned to the current income account, which has a large MPC, while larger transfers, which feel more like wealth, are booked in the asset account, which has a small MPC.
[6] Arkes et al. (1994) were among the first to draw attention to this.
[7] In other Germanic languages one finds "Wie gewonnen, so zerronnen" (German), "Zo gewonnen, zo geronnen" (Dutch); in Spanish "Lo que llega facil, facil se va".

influence on the recipients' spending behavior as they try to cope with them.[8] Feelings about income matter because a general property of emotions is that they are states of arousal that lead to regulatory or coping behaviors. In particular, people try to maintain positive feeling states and to mitigate negative feeling states (Lazarus and Folkman, 1984), with the latter usually providing the more powerful impetus for coping (Baumeister et al., 2001).

As a result, when negative affective tags are associated with the source of income, people are less likely to spend it on hedonic goods (potential guilt reinforcing the negative feelings) and more likely to spend it on goods that mitigate the affective tag's negativity, such as utilitarian goods (e.g. basic needs, durables, investments) that are functional and provide long lasting benefits. On the other hand, if positive affective tags are attached, people may be more inclined to spend it on hedonic goods, to maintain the feel good state. This would suggest that people are more likely to spend hard earned money on necessities and investments, while being more inclined to spend unearned money on hedonic goods.

A better understanding of whether the amount of effort dispensed in acquiring income affects spending behavior, can provide important additional insights to optimize the design of many policy interventions. For example, massive redistribution programs are being developed in many transforming countries to reduce poverty and stem the growing rural-urban divide. Is it more efficient to do so through (unconditional or conditional) transfers such as in China's Harmonious Socialist Countryside program or in Brazil's Bolsa Familia or are Employment Guarantee Schemes the better option, as in India? Similarly, would potential differences in spending on food and non-food from earned and unearned incomes make social protection measures that provide employment in times of crises be more effective in improving nutritional outcomes than equivalent amounts of cash transfers, which may be easier to administer.[9]

Here, the paper takes an empirical perspective and addresses two questions in particular: 1) whether earned and unearned income are indeed fungible, as predicted by standard micro-economic theory, and if not, 2) whether there are plausible grounds to attribute this to mental accounting based on effort. While emotional accounting would provide a plausible account

[8] That feelings affect how people manage their spending can for example be seen in people's attempts to temporally decouple payments from consumption to avoid that the immediate pain from paying for a product undermines the pleasure from its consumption (Prelec and Loewenstein, 1998). The ticking of the rental car meter undermining the pleasure of the ride, often inducing people to prefer rentals with unlimited mileage, is an oft quoted example of this phenomenon.

[9] Villa, Barrett and Just (2011) document for example a link between dietary diversity and the source of income among pastoralist households in East Africa, a link which they can partly attribute to mental accounting. Though, they don't distinguish their income sources by the amount of effort dispensed. For a comprehensive review of different other factors that affect the effectiveness of social safety nets, see Grosh et al. (2008).

for such behavior, probing the psychological foundations of mental accounting by effort as such, falls beyond the scope of this paper. To examine the two questions posed, the focus is on contemporaneous consumption and it is tested whether the marginal propensities to consume out of earned and unearned income differ across a series of basic (including utilitarian) and non-basic (including adult, prestige or hedonic) goods.[10]

To shed light on the second question, the explanatory power of a series of alternative hypotheses is examined, with special attention to intra-household dynamics. If the likelihood of earning versus receiving income is for example gender sensitive, then differences in the MPCs from earned and unearned income on different consumption goods may simply reflect differences in gender preferences and intra-household bargaining dynamics[11] as opposed to a process of mental accounting by effort. It is furthermore possible that unearned income is more (or less) unanticipated/transitory than earned income, calling attention to the predictions of the permanent income hypothesis (PIH). Note however, that the PIH is really about the intertemporal allocation of consumption, i.e. the choice between spending and saving. It holds that unanticipated income (e.g. windfalls) is more likely to be saved, while spending levels are driven by the amount of anticipated (permanent) income. Here the focus is on differences in current spending across different types of goods.

Spending on consumer durables, however, also contains an element of saving, as the flow of services emanating from consumer durables is spread across time. A higher MPC of spending on consumer durables from unearned income would thus be consistent with the predictions from the PIH if unearned income were also more unanticipated. Therefore, consumer durables are generally not included among the consumption items examined here. Nonetheless, by way of robustness, it will be explored whether the observed differences in MPC from earned and unearned income also hold among the anticipated or permanent part of earned and unearned income. This also helps examine the robustness of the findings against possible differences in measurement error among earned and unearned income.

The empirical application of this paper is to four distinct real world and low income settings in Africa and China. In particular, to estimate the MPCs from earned and unearned

[10] In a companion paper, Christiaensen and Pan (2010a) examine both questions in the context of intertemporal consumption allocation, i.e. they test whether the marginal propensities to consume and save differ across earned and unearned income sources and find that unearned income is more likely to be spent and earned income more likely to be saved.

[11] Income received by women has been widely documented to be more likely to be spent on food (Senauer, Garcia, and Jacinto, 1988; Hoddinott and Haddad, 1995; Duflo and Udry, 2004), women and children's clothing (Lundberg, Pollak and Wales, 1997), schooling (Gitter and Barham, 2008), and health (Thomas, 1990, 1993; Duflo 2003), and less likely to be spent on alcohol and tobacco (Hoddinott and Haddad, 1995).

income across different goods, household fixed effects and time varying village fixed effect panel regression techniques are applied to a three-round panel of about 1,800 rural households from two geographically and ethnically distinct regions in Tanzania—Kilimanjaro and Ruvuma, and a five-year household panel of 1500 rural households from two geographically and ethnically different provinces in western China—Gansu and Inner Mongolia. Estimates thus reflect revealed preferences in the market place derived from standard household budget surveys, as opposed to stated preferences, or revealed preferences derived from observed behavior in experimental settings.[12] Very few studies have examined the existence of mental accounting in developing countries or outside experimental settings.[13] To our knowledge, none have explored mental accounting by earned/unearned income as such in such settings.

Households are found to have a higher marginal propensity to spend unearned income on alcohol and tobacco, clothing, transportation and communication, while they are more likely to spend earned income on education. In most cases, unearned income is at the margin also more likely spent on non-staple food, while earned income is at the margin more likely used for buying staples. The results further confirm that men and women display clear differences in spending preferences, as has been widely documented in the literature. However, both men and women are also more likely to spend their unearned income on non-basic adult and prestige goods such as clothing, transport and communication, and also alcohol and tobacco for men. Overall, the findings lend some credence to the age-old saying "Easy come, easy go". The spending patterns from earned and unearned income sources differ, contrary to what standard economic theory holds, and in a manner that cannot be fully explained by intra-household dynamics or a series of other competing hypotheses, which are also examined.

The paper proceeds by reviewing the different income sources and consumption patterns across the rural settings studied here (section 2). The argument of mental accounting by effort is then presented more formally in section 3. The empirical strategy is described in section 4. Section 5 discusses the empirical findings, including those from the different robustness tests. Section 6 concludes.

[12] While the latter help greatly in establishing causality, they also require great care in addressing potential issues of randomization bias and framing (List, 2009). The use of the more widely available, standard, panel household budget surveys to explore the hypotheses advanced here further facilitates re-examination of these hypotheses in other cultural settings. It also allows for considering a broader set of income sources and consumption sources than those examined in (laboratory and natural) experiments which are typically confined to particular consumption goods and/or more precisely defined transfer (e.g. child allowance, coupon).

[13] Duflo and Udry (2004) and Villa, Barrett and Just (2011) are noteworthy exceptions.

2 Spending and Earnings in Rural Tanzania and China

To explore the link between spending behavior and sources of income in Tanzania, the study uses the information collected under the Vulnerability Household Panel conducted in rural Kilimanjaro and Ruvuma, two cash crop producing regions in eastern and southern Tanzania respectively. Kilimanjaro is a richer and better connected region in Tanzania, situated in the north east and bordering Kenya. Ruvuma is in the south, bordering Malawi, and is poorer, geographically more remote, and ethnically distinct.[14] About 900 households, representative of all agricultural households, were surveyed in each region in 2003/4, 2004/5 and 2009.[15] Most modules, including the income and expenditure modules used here, are identical across survey rounds.

Income is coded into two categories, earned and unearned income, based on the effort involved in obtaining it. Earned income includes farm income, wage income, and business income. Unearned income includes transfers, remittances, gifts and pension[16]. Farm income makes up about two thirds of earned income in both regions (62% and 65% in Kilimanjaro and Ruvuma respectively) (Tables 1 and 2)[17]. Remittances are the most important unearned income, accounting for about half of the unearned income (47% in Kilimanjaro and 53% in Ruvuma). About 57% of the households in Kilimanjaro and 25% of the households in Ruvuma report having received unearned income. Unearned income exceeds earned income only for a few households (11% of the households in Kilimanjaro and 2% of the households in Ruvuma). Among those whose unearned income is strictly positive, but smaller than their earned income, it amounts on average to between 8% and 10% of earned income.

Both earned non-farm income and unearned income can be split up by the gender of the person receiving it. This is useful to probe whether potential differences in spending from earned and unearned incomes are driven by differences in preferences among gender and intra-household dynamics. Among the households in Kilimanjaro, more than 50 % of their male adults and about 32% of their female adults earn non-farm income, with men on average

[14] The sample was designed to be representative of all agricultural households in rural Kilimanjaro and Ruvuma. Christiaensen and Sarris (2007) and Christiaensen and Pan (2010b) provide a detailed description of the survey and sampling design and a full socio-economic characterization of the regions.

[15] While attrition was limited during the second round, it was more severe in the last round (772 households interviewed in Kilimanjaro and 667 in Ruvuma). The sampling weights have been corrected accordingly, using the inverse of the probability of being interviewed in round 2 or 3 as correction factor. See Christiaensen and Pan (2010b, 2012) for details about the attrition treatment.

[16] The inclusion of pension in the unearned income category is motivated by the large time lag between earning and receiving pension. This has arguably induced some emotional disconnect. Nonetheless, the robustness of the results to excluding pensions from unearned income will be checked.

[17] In Table 1 and 2, means are calculated without the top 1% of each variable. Therefore the summation of the means of all sub-categories of income is not equal to the average income.

earning three times as much nonfarm income than women. Similarly, in Ruvuma, 58% of men and 28% of women earn non-farm income, though the amounts are on average smaller. More than 33% of men and 26% of women report having received unearned income, with the amounts reported by men on average twice as large as those for women. There is thus sufficient variation in the data to identify whether men and women spend earned and unearned incomes differently.

Tables 1 and 2 also show how much of the income is in cash and how much is in kind (mostly food produced for auto-consumption).[18] When markets are missing or when they are poorly developed (as in cash-constrained societies), trade becomes more costly and the nature of income (in kind or cash) may affect what it is spent on. While earned income is on average half in cash and half in kind in Kilimanjaro, in Ruvuma, cash income is on average 63 percent larger than in kind income. In both regions, a much bigger part of the unearned income is in cash.

Consumption is split up in food and nonfood expenditures. Food expenditures make up about 48% of overall spending in Kilimanjaro and 55% in Ruvuma. Given that the sample is from a low-income setting and following Bennett's Law, non-staple food may still be considered a non-basic good and it is thus useful to divide food expenditures accordingly.[19] On average slightly more is spent on non-staple food than on staple food in Kilimanjaro (the richer province), while staple food spending exceeds non-staple food spending by 32 percent in Ruvuma. Alcohol and tobacco spending (a hedonic good) is considered separately. It is positive for 39% of households, making up between 2% and 80% of overall reported spending.

Non-food expenditures are categorized in spending on housing and appliances, transportation and communication, and clothing. The latter can be split up further in spending on men's, women's and children's clothing. Housing expenditure accounts on average for 8% of total spending in Kilimanjaro and 5% in Ruvuma, with spending on the other two categories between one third and one half of that. Finally, three more "social" expenditure categories are considered: health expenditures, education expenditures (in effect an investment expenditure) and gifts given.

To study spending behaviors in rural China, the annual 2000-2004 household panel

[18] Non-farm income in kind and in cash have been recorded separately in the questionnaire. Crops and livestock sold make up cash farm income, with the remainder classified as in kind income (for auto-consumption and seeds).

[19] Staple food includes bananas, grains, potatoes and cassava. Non-staple food includes expenditures on meat, dairy, and fruits and vegetables.

data from rural Gansu and Inner Mongolia are used. Both are agriculture based, lagging, inland provinces in western China. Gansu is the poorer of the two. It is mountainous and characterized by growing circular migration. Rural Inner Mongolia is somewhat richer and ethnically more diverse, with livelihoods still firmly anchored in agriculture. The data were collected by the National Bureau of Statistics of the Government of China as part of the monitoring and evaluation system for the World Bank supported Western Poverty Reduction Project.[20]

Fifteen project counties were sampled (8 in Inner Mongolia and 7 in Gansu) and within each sample county, 10 villages were sampled in the ratio of 6 project villages to 4 non-project villages. Within each sample village, 10 households were sampled randomly, yielding a sample of 800 households in Inner Mongolia and 700 in Gansu. Households were surveyed annually between 1999 and 2004. All data on household consumption, income and loans were collected using the daily diary method, with the exception of the baseline year 1999, when annual recall was used. To ensure comparability in the consumption data, the study is confined to the 2000-2004 panel. Data on household characteristics, e.g. demography, education, and assets were collected every year in December using the recall method.[21]

As before, income is coded into earned and unearned income. Earned income includes wage income from temporary migration to urban areas, wage income from participating in off-farm wage-earning activities locally, and income from family business. Farming, forestry, fishery, animal husbandry, construction, transportation, restaurant and other services are all considered as family business. Unearned income includes remittances, gifts and other transfers. Most earned income is derived from family businesses (78% in Gansu and 86% in Inner Mongolia) (Tables 3 and 4).

Less than half of the households have wage income. In both provinces, households have on average between 300 and 400 (1999) Yuan unearned income. Yet, these averages hide a wide range of experiences, with about a third of the sample households not receiving any unearned income during the survey period, the majority having less unearned income than earned income and a small group (1%) having more unearned than earned income. Among those whose unearned income is strictly positive, but smaller than their earned income, it amounts on average to between 5% and 7% of earned income. Most households in both regions earn a substantial amount of income in kind (mostly food for auto-consumption),

[20] The project operated in Inner Mongolia (IM) and Gansu (GS) between 1999 and 2004 and supported households in project villages through the provision of agricultural loans and rural infrastructure.
[21] Because households were diligently visited every two weeks to collect the diaries, attrition has been very limited.

even though the cash component of earned income is usually the largest. Most unearned income on the other hand is in cash, with relatively few households receiving unearned income in kind, especially in Inner Mongolia. The China income data do not allow further disaggregation by gender.

3 A Theoretical Account of Mental Accounting

When there is some pain associated with spending hard earned money on less basic or more frivolous goods or when there is less joy when spending unearned money on basic goods, households may mentally put earned and unearned income in different accounts, allowing them to evaluate the utilities derived from different consumption goods differently, depending on whether they are financed by earned or unearned income. The core intuition of a household's consumption decision when facing such an (emotional) form of mental accounting is captured in the following one period optimization model:

$$\max_{c_B^u, c_B^e} \ \ln(\theta_1 c_B^u + c_B^e) + \lambda \ln(c_{NB}^u + \theta_2 c_{NB}^e) \qquad (1)$$

s.t. $y^u = c_{NB}^u + c_B^u, \qquad y^e = c_{NB}^e + c_B^e,$

$c_{NB}^u, c_{NB}^e, c_B^u, c_B^e \geq 0,$

$c_{NB}^u + c_{NB}^e \neq 0, \qquad c_B^u + c_B^e \neq 0.$

where c_B^u and c_B^e are the amount spent on basic consumption goods (e.g. staples) using unearned and earned income respectively, and c_{NB}^u and c_{NB}^e the amounts spent on non-basic goods using unearned and earned income respectively. y^u, y^e are unearned and earned income respectively. λ (>0) captures how the household weighs the utilities from consuming basic and non-basic consumption goods. Though not endogenized here, λ is likely also dependent on income with poorer households attaching more weight to the consumption of basic goods (smaller λ) than richer ones, as per Engel's and Bennett's Laws.

The parameter θ_1 reflects the loss in pleasure derived from spending unearned income on basic consumption goods ($0 \leq \theta_1 \leq 1$) following, for example, from the break in a person's "feel good" mode after his acquisition of unearned income; θ_2 reflects the additional pain/guilt derived from spending earned income on non-basic consumption goods ($0 \leq \theta_2 \leq 1$), due, for example, to the failure to mitigate the negative emotional tag associated with earned incomes. Differences in the parameters θ_1 and θ_2 could for example reflect the differential impetus for coping with negative and positive feelings, with the impetus for the former usually stronger than for the latter, implying a larger psychic cost associated with spending earned money on nonbasic goods than with spending unearned

money on basic goods ($\theta_2 < \theta_1$) (Lazarus and Folkman, 1984).

Given different emotional tags/utilities associated with spending earned and unearned income, unearned consumption cannot exceed unearned income ($y^u = c_{NB}^u + c_B^u$) and earned consumption cannot exceed earned income ($y^e = c_{NB}^e + c_B^e$). If no emotional tags were attached ($\theta_1 = \theta_2 = 1$), the household's consumption allocation decision in (1) reverts to a standard consumption optimization model.[22] This also implies that aside from the psychic cost (captured by θ_1), basic goods obtained from earned and unearned income act as perfect substitutes, in that, once the psychic cost has been accounted for, the utility obtained from the total consumption of basic goods does not depend on how it has been financed. The same holds for the non-basic goods. In other words, $\theta_1$and θ_2, capturing the psychic costs, could be thought of as psychic prices, which work through the utility function only, and not in the standard budget constraints.

Turning to the solution of (1), the interior case, whereby the household finances both basic and non-basic goods with earned and unearned income is considered first. The corresponding Lagrange function is:

$$L = \ln(\theta_1 c_B^u + c_B^e) + \lambda \ln(c_{NB}^u + \theta_2 c_{NB}^e) + \mu_1(y^u - c_B^u - c_{NB}^u) + \mu_2(y^e - c_B^e - c_{NB}^e). \quad (2)$$

The first order conditions can be derived as:

$$\frac{\theta_1}{\theta_1 c_B^u + c_B^e} = \mu_1, \qquad \frac{1}{\theta_1 c_B^u + c_B^e} = \mu_2, \quad (3)$$

$$\frac{\lambda}{c_{NB}^u + \theta_2 c_{NB}^e} = \mu_1, \qquad \frac{\lambda\theta_2}{c_{NB}^u + \theta_2 c_{NB}^e} = \mu_2.$$

Equations (3) implies that $-\frac{1-\theta_1}{\theta_1 c_B^u + c_B^e} = \frac{\lambda(1-\theta_2)}{c_{NB}^u + \theta_2 c_{NB}^e}$, which cannot be satisfied when $0 \leq \theta_1 < 1, 0 \leq \theta_2 < 1$. Therefore, an interior solution does not exist.

It can further be shown that there are three possible corner solutions[23]: 1) all earned income is spent on basic goods and all unearned income is spent on non-basic goods; 2) all unearned income is spent on non-basic goods and earned income is spent on both basic and non-basic goods; 3) the reverse, whereby all earned income is spent on basic goods and unearned income is spent on both basic and non-basic goods. It will first be explored how the MPCs from earned income on basic and non-basic goods compare with those of unearned income.

[22] As in a standard consumption optimization problem, it is assumed that the household consumes at least a small amount of both basic and non-basic goods.

[23] Given the psychic costs involved in spending unearned income on basic goods and spending earned income on non-basic goods, other corners solutions that entail zero spending of unearned income on non-basic goods and/or zero spending of earned income on basic goods cannot be optimal.

When all unearned income is spent on nonbasic goods and earned income is only spent on basic goods (case 1): $c_B^u = 0, c_B^e = y^e$. It can then readily be seen that the MPC on basic goods from earned income is $MPC_B^E = \frac{\partial(c_B^u + c_B^e)}{\partial y^e} = 1$ and the MPC on basic goods from unearned income is $MPC_B^U = 0$. The MPC on non-basic goods from earned income is $MPC_{NB}^E = 0$ and from unearned income $MPC_{NB}^U = 1$. The MPC on basic goods from earned income is bigger than that from unearned income and MPC on non-basic goods from earned income is smaller than that from unearned income.

In the second case, whereby all unearned income is spent on non-basic goods, while earned income is spent on both basic and non-basic goods: $c_B^u = 0, 0 < c_B^e < y^e$, the consumption decision of the household becomes:

$$\max_{c_B^e} \ \ln(c_B^e) + \lambda \ln(y^u + \theta_2 c_{NB}^e) \tag{4}$$

s.t. $y^e = c_B^e + c_{NB}^e$,

$c_B^e > 0, c_{NB}^e > 0$.

The solution to this problem is

$$c_B^u = 0, c_{NB}^u = y^u\,, \tag{5}$$

$$c_B^e = \frac{1}{1+\lambda} y^e + \frac{1}{\theta_2(1+\lambda)} y^u, c_{NB}^e = \frac{\lambda}{1+\lambda} y^e - \frac{1}{\theta_2(1+\lambda)} y^u\,.$$

From (5), it becomes clear that the amount of earned income spent on basic (c_B^e) and non-basic (c_{NB}^e) goods no longer only depends on the amount of earned income, but also on the amount of unearned income. The MPC on basic goods from earned income is $MPC_B^E = \frac{\partial(c_B^u + c_B^e)}{\partial y^e} = \frac{1}{1+\lambda}$. Similarly, the MPC on basic goods from unearned income is $MPC_B^U = \frac{\partial(c_B^u + c_B^e)}{\partial y^u} = \frac{1}{\theta_2(1+\lambda)}$. It can be readily seen that the MPC on basic goods from earned income is smaller than that from unearned income, contrary to what was hypothesized at the outset. As basic and non-basic goods are consumed in a fixed proportion, given homothetic preferences, an increase in unearned income, which can only be spent on non-basic goods, frees up a larger than proportional share in earned income, given the psychic cost associated with spending earned income on non-basic goods. Similarly, the MPC on non-basic goods from earned income is $MPC_{NB}^E = \frac{\lambda}{1+\lambda}$ and from unearned income $MPC_{NB}^U = \frac{\theta_2(1+\lambda)-1}{\theta_2(1+\lambda)}$ and the MPC on non-basic goods from earned income is bigger than that from unearned income.

The third corner solution is the mirror image of the second one, with all earned income spent on basic goods and unearned income spent both on basic and non-basic goods: $0 <$

$c_B^u < y^u, c_B^e = y^e$. The consumption decision the household faces becomes:

$$\max_{c_B^u} \ \ln(\theta_1 c_B^u + y^e) + \lambda \ln(c_{NB}^u) \tag{6}$$

s.t. $y^u = c_B^u + c_{NB}^u$,

$c_B^u > 0, c_{NB}^u > 0.$

The solution to this problem is

$$c_B^u = \frac{1}{1+\lambda} y^u - \frac{\lambda}{\theta_1(1+\lambda)} y^e, c_{NB}^u = \frac{\lambda}{1+\lambda} y^u + \frac{\lambda}{\theta_1(1+\lambda)} y^e \ , \tag{7}$$

$c_B^e = y^e, c_{NB}^e = 0$.

The MPC on basic goods from earned income is $MPC_B^E = \frac{\partial(c_B^u + c_B^e)}{\partial y^e} = \frac{\theta_1(1+\lambda)-\lambda}{\theta_1(1+\lambda)}$.

Similarly, the MPC on basic goods from unearned income is $MPC_B^U = \frac{1}{1+\lambda}$. The MPC on non-basic goods from earned income is $MPC_{NB}^E = \frac{\lambda}{\theta_1(1+\lambda)}$ and from unearned income $MPC_{NB}^U = \frac{\lambda}{1+\lambda}$. Similar to the second corner solution, the MPC on basic goods from earned income is smaller than that from unearned income and MPC on non-basic goods from earned income is bigger than that from unearned income.

In conclusion, the theoretical analysis confirms that when there are psychic costs associated with spending earned income on non-basic goods and with spending unearned income on basic goods, a variant of mental accounting, unearned and earned income are no longer fungible. In each of the different cases do the MPCs from earned and unearned income on the two types of goods differ. The direction of the difference depends however on the circumstances, raising the question under which circumstances it is that earned income is more likely to be spent on basic goods and unearned income is more likely to be spent on non-basic goods, as hypothesized at the outset of the paper. This is equivalent to asking when case one is more likely to be the optimum. To explore this, consider the Lagrange function in case one:

$$L = \ln(\theta_1 c_B^u + c_B^e) + \lambda \ln(c_{NB}^u + \theta_2 c_{NB}^e) + \mu_1(y^u - c_B^u - c_{NB}^u) + \mu_2(y^e - c_B^e - c_{NB}^e) + \mu_3 c_B^u + \mu_4 c_B^e + \mu_5 c_{NB}^u + \mu_6 c_{NB}^e.$$

Since $c_B^e \neq 0, c_{NB}^u \neq 0$, it follows that $\mu_4 = 0, \mu_5 = 0$. The first order conditions are

$$\frac{\theta_1}{\theta_1 c_B^u + c_B^e} - \mu_1 + \mu_3 = 0, \qquad \frac{1}{\theta_1 c_B^u + c_B^e} - \mu_2 = 0,$$

$$\frac{\lambda}{c_{NB}^u + \theta_2 c_{NB}^e} - \mu_1 = 0, \qquad \frac{\lambda\theta_2}{c_{NB}^u + \theta_2 c_{NB}^e} - \mu_2 + \mu_6 = 0.$$

It follows that $\mu_3 = \frac{\lambda}{c_{NB}^u + \theta_2 c_{NB}^e} - \frac{\theta_1}{\theta_1 c_B^u + c_B^e}$ and $\mu_6 = \frac{1}{\theta_1 c_B^u + c_B^e} - \frac{\lambda\theta_2}{c_{NB}^u + \theta_2 c_{NB}^e}$. For case one to be

the optimum, the following conditions need to be satisfied

$$\frac{\lambda}{c_{NB}^{u}+\theta_2 c_{NB}^{e}}-\frac{\theta_1}{\theta_1 c_B^{u}+c_B^{e}}=\frac{\lambda}{y^{u}}-\frac{\theta_1}{y^{e}}\geq 0,$$

$$\frac{1}{\theta_1 c_B^{u}+c_B^{e}}-\frac{\lambda\theta_2}{c_{NB}^{u}+\theta_2 c_{NB}^{e}}=\frac{1}{y^{e}}-\frac{\lambda\theta_2}{y^{u}}\geq 0.$$

This is equivalent to

$$\theta_1 \leq \lambda\frac{y^{e}}{y^{u}}\leq \frac{1}{\theta_2}. \tag{8}$$

It can further be shown that case two occurs when $\lambda\frac{y^{e}}{y^{u}}$ exceeds this range ($\frac{1}{\theta_2}<\lambda\frac{y^{e}}{y^{u}}$) and case three when $\lambda\frac{y^{e}}{y^{u}}$ falls below this range ($\lambda\frac{y^{e}}{y^{u}}<\theta_1$).[24]

From (8), three important insights emerge. First, the bigger the pain associated with spending earned income on non-basic goods (the smaller is θ_2) and the larger the loss in joy from spending unearned income on basic goods (the smaller is θ_1), the more likely that case one holds. Second, the model suggests that the ratio between earned income (y^{e}) and unearned income (y^{u}) also matters, with the MPC of earned income on basic goods more likely to be higher than the MPC of unearned income, the less extreme the ratio between earned income (y^{e}) and unearned income (y^{u}) is. When the ratio of earned to unearned income is very big (putting one in case 2) or very small (putting one in case 3), the MPC of unearned income on basic goods is more likely to be larger than the MPC of earned income.

Finally, note that as the weight associated with non-basic goods consumption (λ) increases, the term ($\lambda\frac{y^{e}}{y^{u}}$) is also more likely to fall outside the range, suggesting that case one is more likely to hold for poorer than for richer households. The latter does however not hold if $\frac{y^{e}}{y^{u}}$ is negatively related with income, as our sample results suggests. The relationship between income levels and the likelihood of spending more from unearned income (at the margin) on nonbasic goods (and vice versa) remains an empirical matter.

4 Testing Income Fungibility in Practice

Beginning with the simplest form, let consumption of goods *k* by household *h* living in village *v* at time *t* depend on income in a linear fashion as follows:

[24] To see this, note that for (5) to hold, $c_{NB}^{e}=\frac{\lambda}{1+\lambda}y^{e}-\frac{1}{\theta_2(1+\lambda)}y^{u}>0$ or $\frac{1}{\theta_2}<\lambda\frac{y^{e}}{y^{u}}$. Similarly, for (7) to hold, $c_B^{u}=\frac{1}{1+\lambda}y^{u}-\frac{\lambda}{\theta_1(1+\lambda)}y^{e}>0$ or $\lambda\frac{y^{e}}{y^{u}}<\theta_1$.

$$C_{k,vht} = \alpha_{0,k} + \alpha_{1,k} U_{vht} + \alpha_{2,k} E_{vht} + e_{k,vht}, \quad (9)$$

where *U* and *E* represent the household's unearned and earned income respectively and e_{vht} is the error term. When income is fungible, the MPC from unearned income (*U*) is equal to that from earned income (*E*) for each consumption good *k* or $\alpha_{1,k} = \alpha_{2,k}$ This provides a straightforward test of whether earned and unearned income are fungible.

Obviously, direct application of (9) to the data is problematic. First, consumption may not only depend on income but also on credit and (returns to financial) assets, which are likely correlated with income itself. Second, households are located in different villages. Policies, access to public amenities such as infrastructure and cultural characteristics that are specific to locations may simultaneously affect household income and spending. Third, households are different. For example, a household with extensive social networks may receive and send out more gifts and transfers than a less well-connected household. Such networks are not directly observed in the data. Households also have different demographic characteristics, which may affect the composition of their income as well as their spending behavior.

To accommodate these considerations equation (9) is augmented with loans (L_{vht}) taken during *t*, the household's financial asset position (A_{vht-1}) at the beginning of the year *t* before investment returns have been realized[25], Liv_{vht-1} the value of livestock at the beginning of year *t*, time varying village dummies represented by $V_{t,j}$, household fixed effects u_{vh}, and a series of time varying household characteristics $H_{vht,i}$:

$$C_{k,vht} = \alpha_{1,k} U_{vht} + \alpha_{2,k} E_{vht} + \alpha_{3,k} L_{vht} + \alpha_{4,k} A_{vht-1} + \alpha_{5,k} Liv_{vht-1} + \sum_{i=1}^{m} \alpha^{H}_{i,k} H_{vht,i} + \sum_{j=1}^{n} \alpha^{V}_{j,k} V_{t,j} + u_{k,vh} + e_{k,vht}, \quad (10)$$

The set of village-year dummies controls for all time invariant and time variant community characteristics (including changes in infrastructure, project interventions, relative prices and the overall macro-economic conditions). Classical demand theory (see, e.g., Mas-Colell et al. 1995, Chapter 3) implies that demand depends on the wealth level, the price of the commodity and the price of the other commodities (substitutes or complements). By including the village-year dummies in the regressions, we implicitly also control for all the prices and their changes. Time invariant unobserved household

[25] This variable is not included in the regressions using the Tanzanian dataset since we do not have information on financial asset. Given the poorly developed financial sector, saving in the form of financial assets is however usually very small in rural Tanzania.

heterogeneity (including preferences) is controlled for through the inclusion of household fixed effects, while H_{vht} captures the *m* most important remaining time variant household characteristics that may also affect consumption behavior (and income), including household size, age, gender and education level of household head, the dependency and labor ratio, and the proportion of illiterate household members.[26] Table A1 and A2 in the appendix show the summary statistics of the control variables L_{vht}, A_{vht-1}, Liv_{vht-1} and H_{vht}. Equation (10) forms the base equation. It is first estimated using Ordinary Least Squares (OLS)[27] with time varying village level effects and subsequently augmented with a household fixed effect.

As highlighted in the introduction, if earned and unearned income sources are gender specific and spending preferences differ by gender, then it is possible that intra-household resource allocation dynamics drive the estimated MPC on earned and unearned incomes, if intra-household resource allocation dynamics are not properly controlled for. To explore the robustness of the findings against such concerns, earned non-farm and unearned income are introduced separately by the gender of the person who received it:

$$C_{k,vht} = \alpha_k^F F_{vht} + \alpha_k^{EM} EM_{vht} + \alpha_k^{EF} EF_{vht} + \alpha_k^{UM} UM_{vht} + \alpha_k^{UF} UF_{vht}$$
$$+ \alpha_{3,k} L_{vht} + \alpha_{4,k} A_{vht-1} + \alpha_{5,k} Liv_{vht-1} + \sum_{i=1}^{m} \alpha_{i,k}^H H_{vht,i} + \sum_{j=1}^{n} \alpha_{j,k}^V V_{t,j} + u_{k,vh} + e_{k,vht}, \quad (11)$$

where F_{vht} is farm income, EM_{vht} non-farm earned income received by male adults, EF_{vht} non-farm earned income received by female adults, UM_{vht} non-farm unearned income received by male adults, and UF_{vht} non-farm unearned income received by female adults. If only intra-household resource allocation matters, then $\alpha_k^{EM} = \alpha_k^{UM}$ and $\alpha_k^{EF} = \alpha_k^{UF}$. If they are different, then spending from earned and unearned incomes differs, beyond potential gender differences in spending, as predicted by mental and emotional accounting.

Given the salience of the insights from the permanent income hypothesis (PIH) with respect to spending behavior (Friedman 1957; Modigliani and Brumberg 1954), it is further examined whether differences in spending from earned and unearned income also hold for their anticipated component. This also helps examine the robustness of the results against a series of other, related concerns. As indicated before, the insights from the PIH primordially apply to intertemporal choices and suggest that anticipated (permanent) income is more likely

[26] The expenditure regressions for Gansu and Inner Mongolia also include the number of disabled people in the household, capturing some of the household specific health shocks.
[27] The results obtained using the tobit estimator (available upon request from authors) are very similar to the OLS results.

to be consumed and unanticipated (transitory) income is more likely to be saved. For consumption portfolio choice, the PIH only applies to the extent that the consumption goods are considered durables or can be treated as investment and thus savings, which could hold for a small subset of the goods examined here such as clothing (considered a current expenditure by Alderman (1996)), medical expenses and, especially, education. In these cases, differences in the MPC of earned and unearned income may result from differences in their degree of being anticipated or unanticipated. A higher MPC from unearned income on, say, clothing, would then be consistent with the PIH, if unearned income tended to be more unanticipated (transitory). In the spirit of Bhalla (1980), Paxson (1992), Alderman (1996) and Kazianga and Udry (2006), the robustness of the results against this possibility is explored further by decomposing earned and unearned income in their anticipated and transitory parts. It can then be examined whether there is also a difference in the MPC of earned and unearned income when looking at their anticipated part only. If so, the results cannot be fully explained by the PIH, also not for the consumption goods with a flavor of durability. In particular, let:

$$E_{vht} = \sum_{i=1}^{p} \beta_i M_{vht,i} + \sum_{j=1}^{q} \gamma_j S_{vht,j} + v_{vh}^{e} + r_{vht}^{e},$$

$$U_{vht} = \sum_{i=1}^{p} \rho_i M_{vht,i} + \sum_{j=1}^{q} \eta_j S_{vht,j} + v_{vh}^{u} + r_{vht}^{u}, \qquad (12)$$

where M_{vht} represents a set of asset and demographic variables, S_{vht} is a set of shock variables[28], v_{vh}^{e} and v_{vh}^{u} household fixed effects, and r_{vht}^{e} and r_{vht}^{u} error terms. Define

$$EP_{vht} = \sum_{i=1}^{p} \beta_j M_{vht,j} + v_{vh}^{e}, \qquad (13)$$

$$UP_{vht} = \sum_{i=1}^{p} \rho_j M_{vht,j} + v_{vh}^{u},$$

where EP_{vht}, and UP_{vht} are earned and unearned anticipated income, respectively. The residual contains part of the anticipated income, unanticipated income and measurement error. After bootstrapping the error terms, and akin to Bhalla, Paxson, Alderman and Kazianga and Udry, but focusing on the anticipated as opposed to the unanticipated or transitory income

[28] For China, shock variables include absolute deviation of rainfall from its mean, and the interaction of this variable with a set of variables indicating land characteristics, land allocation, and village characteristics. For Tanzania, shock variables include the percentage of land with rainfall much below, below, above and much above normal.

component, it can then be examined whether the MPC of earned and unearned income also holds for their anticipated (or permanent) component by comparing whether $\phi_1 = \phi_2$ in the following estimated equation:

$$C_{k,vht} = \phi_{1,} EP_{k,vht} + \phi_2 UP_{k,vht} + \phi_3 L_{k,vht} + \phi_4 A_{k,vht\text{-}1} + \phi_5 Liv_{k,vht\text{-}1} + \sum_{i=1}^{m} \phi_i^H H_{k,vht,i} + \sum_{j=1}^{n} \phi_j^V V_{k,t,j} + e_{k,vht}, \quad (14)$$

In focusing on the anticipated component of earned and unearned income, concerns that measurement error is driving the results can also be examined. For example, if farm income, which makes up an important part of income in these rural settings, were to be systematically underestimated, this would downwardly bias the estimated coefficient on earned incomes, leading to the erroneous conclusion that unearned income is more likely to be spent on non-basic goods, if the MPC of the latter were to be found to be systematically higher than this of the former. To explore the issue of measurement error further, equation (10) will also be re-estimated using only wage income as earned income. Focusing on the permanent part of income also enables checking the robustness of the results against the possibility that it is the acquisition of earned or unearned income in response to shocks and sudden needs that is driving the spending patterns.

In addition to intrahousehold dynamics and issues related to the differences in expectation regarding the different income sources, differences in liquidity between earned and unearned income sources may also confound the interpretation of the findings. The validity of this hypothesis will be examined by splitting earned and unearned income up in their cash and in kind components and entering them separately in (10). If the observed differences in MPC between earned and unearned income also hold for the cash component, this would suggest that it is not differences in liquidity between earned and unearned income that are driving the results.

Finally, and linking back to the theoretical exposition, it will be examined whether spending patterns from earned and unearned income sources systematically differ across the richer and poorer segments of the population or depending on the ratio of earned to unearned income.

5 Spending Patterns Differ for Earned and Unearned Incomes beyond Differences in Gender Preferences, Their Anticipation and Liquidity

The estimated marginal propensities to consume on different consumption categories using both OLS and household fixed effects estimates (each including time varying village level fixed effects) are presented in Table 5. The results do not support the notion that income is fungible. This is borne out across the different expenditure categories. Beginning with food, there is a tendency in the richer provinces (Kilimanjaro and Inner Mongolia) to spend more on staples from earned income at the margin than from unearned income. In the poorer provinces, there is either no systematic difference (Ruvuma), or a higher spending on staples from unearned income (Gansu). When it comes to non-staples and expenditures on alcohol and tobacco, the results point more systematically in the same direction—the MPC from unearned income systematically exceeds this of earned income in three of the four provinces. This result holds also when controlling for unobserved household heterogeneity (the household fixed effects estimates).

Turning to non-food expenditures, there is no systematic difference in spending patterns from earned and unearned income on housing and appliances, but a larger propensity to spend unearned income on transportation and communication, and clothing. The results are especially strong for the latter category and hold across spending on men's, women's and children's clothing (Table A3), suggesting that it is unlikely that the results are driven by intra-household dynamics alone, an issue explored further below.[29]

Finally, three types of social expenditures are considered: spending on education, health and gifts. With the exception of Kilimanjaro, spending on education is largely financed from earned income. This should not come as a surprise, as educational spending is in essence an investment in the future. On the other hand, households finance gifts largely from unearned income, with the MPC on gifts from unearned income (which includes gifts received) substantially larger than from earned income. This suggests a degree of reciprocity (Sobel, 2005), not unlike what is held by the saying "What goes around, comes around". It also goes against the grain of income fungibility, though is consistent with the spirit of emotional accounting (reinforcing the positive emotional state of receiving a gift by returning the favor, either to the same person or to someone else). There is no evidence for a systematic

[29] If women were for example the main recipients of transfers (unearned income) and men the main recipients of earned incomes, the results might simply reflect gender differences in preferences. If so, one would especially expect a larger difference in MPC from unearned income for spending on female and children's clothing, but not for spending on male clothing.

difference in the sources of income used to finance health spending.

The overall pattern emerging from these 4 provinces is that unearned income is more likely to be spent especially on clothing, alcohol/tobacco, and gifts but also on transportation and communication and non-staple food. Earned income on the other hand is more likely spent on education and staple food (at least in the richer, better connected villages). No systematic difference across provinces was observed in spending from earned and unearned income on health and housing/appliances. Differences in spending patterns from different sources of income have also been reported by Duflo and Udry (2004) among rural households in Cote d'Ivoire and among pastoralists in East Africa (Villa, Barrett and Just, 2010). These authors further showed that these differences held up beyond considerations of intra-household bargaining.

To explore this further, the information on the gender of the recipient of earned non-farm income and the recipient of unearned income is exploited (Table 6). Overall, the findings confirm differences in spending preferences by gender as has been widely documented in the literature (Thomas, 1990; Hoddinott and Haddad, 1995; Duflo, 2003). However, differences in MPC from earned and unearned income also persist even after controlling for the gender of the income recipient. This is most vividly illustrated in the spending patterns on clothing, transportation and communication, but also on alcohol/tobacco and gifts. That the differences in MPC between earned and unearned persist among these consumption categories even after controlling for the gender of the recipient is empirically quite powerful given that identification of these effects becomes more difficult as splitting the income sources by gender of the recipient further dilutes their size.

Beginning with clothing, it can be readily seen that the marginal propensity to spend unearned income on clothing is larger for both male and female unearned incomes. The MPC is 0.039 for men and 0.058 for women from unearned income (household fixed effects estimates) compared with 0.003 for both men and women from earned income in Kilimanjaro. It is 0.131 for men and 0.168 for women from unearned income (household fixed effects estimates) in Ruvuma compared with 0.022 and 0.043 for earned income respectively. While the numbers also suggest a slightly larger MPC to spend on clothing among women than men, the core insight is that the difference in MPC from unearned and earned income holds among both men and women, also after controlling for unobserved household characteristics (household fixed effects), consistent with the predictions from mental accounting and confirming that intra-household allocation dynamics alone do not suffice to explain the

observed spending patterns.[30]

Similarly, the marginal propensity to spend on transportation and communication tends to be larger from unearned income among both men and women, even though the coefficients are not always precisely estimated, especially when using the household fixed effects estimator. For example, while the OLS estimates of the MPCs for men and women from unearned income in Ruvuma are clearly and statistically larger than those from earned income, when controlling for household fixed effects, the MPC in Ruvuma from male unearned income remains almost 8 times larger (0.154 compared with 0.02 for male earned income), though with a t-value of 1.613 it just fails to meet the 10 percent significance level.

Spending on alcohol and tobacco from unearned income by males is also much larger than from earned income (though again measured with some imprecision when considering the household fixed effects estimated in Kilimanjaro). Interestingly, however, when unearned income is allocated to women, it reduces spending on alcohol and tobacco in Kilimanjaro. This underscores 1) that spending preferences differ by gender and 2) that gender preferences as such do not explain the differences in MPC from unearned and earned incomes. Similarly, gift giving from unearned income is also higher than from earned income for both men and women in Ruvuma, though there is no clear pattern in Kilimanjaro. Spending on non-staple food from unearned income is larger than from earned income, with the results only significant in Kilimanjaro and more pronounced for men than for women. The disaggregation of income sources by gender did not generate clear cut patterns for spending behavior on staples and education.

Second, with the exception for clothing in Gansu and Inner Mongolia, the general finding that the MPC is larger for spending on non-basic goods (transportation and communication, alcohol and tobacco, non-staple food) and gifts, and smaller for spending on basic goods (staples) and education, also holds when looking at the anticipated component of income only (Table 7). This suggests that the effects of earned and unearned income go beyond their anticipated and unanticipated features and that they go beyond the predictions of the PIH, which are in this context only relevant for goods with a durable aspect to begin with.[31] It further suggests that the results are robust against concerns of measurement error or

[30] This general pattern holds for expenditures for men's, women's and children's clothing with the only exception of female (though not male) spending on children's clothing in Ruvuma, where there is a higher MPC of female spending on children's clothing from earned income (Table A4).

[31] While spending on clothing in rural China appears more driven by the earned portion of anticipated income, the reverse seems to hold when it comes to the unanticipated income, as suggested by the widening of the MPC gap between unearned and earned income in going from the OLS to the household fixed effects results when

behavioral change in response to certain shocks.[32]

Thirdly, the results appear also not to be driven by differences in the liquidity of earned and unearned incomes. Entering the in kind and in cash components of earned and unearned income separately, does not fundamentally alter the findings (Table 8).[33] At the margin, unearned (cash) income is still more likely to be spent on non-staple food (except in Ruvuma as before in Table 5), alcohol/tobacco, clothing, transportation and communication (more obviously in Tanzania) and gifts (for in kind income in Tanzania and in cash income in China). Earned income on the other hand is more likely spent on education (for in cash income) and staple food (for in kind income, suggesting some degree of stickiness as most earned in kind income is food produced for auto-consumption).

As explored in the theoretical section, the strength of the observed relationships may differ depending on the earned to unearned income ratio and between richer and poorer households.[34] To explore the latter, earned and unearned income were interacted with an indicator variable indicating whether the household belongs to the top or bottom half of the sample (Table A6). No systematic difference was observed in the general pattern of higher spending of unearned income on clothing, communication and transport, alcohol and tobacco, gifts and non-staples across these higher and lower income groups. Regarding the former, the observed differences in MPC from unearned and earned incomes became slightly more pronounced when excluding observations where unearned income exceeded earned income, which is consistent with the theoretical prediction that the MPC of earned income on basic goods is more likely to be higher than that of unearned income, the less extreme the ratio between earned and unearned income is. The results remain similar when we exclude the

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looking at earned and unearned income only (Table 5). Given the severe winters in western China, clothing displays most likely more features of a basic good, especially when it comes to deciding on consumption from permanent income, while it may display more features of a non-basic good, when it comes to deciding on consumption from transitory income. Though even in the latter case, one would expect no difference in the MPC from spending transitory earned and unearned income as suggested in Table 5, if the PIH were the driving behavioral force.

[32] For example, a drought may lead households to supply more labour on off-farm activities to earn enough for food consumption, causing a correlation between earned income and food consumption. Examining this further in another way, the five most important shocks reported by the Tanzanian households are included directly in the consumption equation, including the occurrence of a drought, harvest losses, theft, loss of livestock, illness and death of household members (Table A5). The conclusion remains that earned income has a bigger MPC on staple food and education, and unearned income has a bigger MPC on non-basic goods such as alcohol/tobacco, clothing, transportation and communication, as well as gifts. Controlling for labor days spent in agricultural, non-farm and migration activities in the regressions also does not change the conclusion.

[33] There was also no difference in this general pattern between households selling agricultural commodities and those who do not (results not reported here).

[34] Households are classified as rich or poor according to whether their consumption per capita is higher or lower than the median in the province in the first year of the panel. Excluding pensions or remittances from unearned income or using only wage as earned income did not change the observed patterns.

observations with zero unearned income.[35]

6 Conclusion

Behavioral economists are calling attention to consumption phenomena that violate the income fungibility assumption, which has underpinned most micro-economic modeling and policy advice. This paper draws attention to one such phenomenon, the link between spending behaviors and the effort dispensed in earning income. This has received little attention in the literature so far, despite wide recognition of its practical relevance as reflected in the recurrence of the saying "Easy come, Easy go" across the world's cultures and languages. If true, this would suggest that incomes are categorized in different mental accounts based the efforts involved in acquiring it, from which people then spend differently.

This is explored here empirically by examining whether the marginal propensity to consume from earned and unearned income differs across more and less basic consumption categories (e.g. staples versus non-staples food, clothing, tobacco, alcohol). To do so, it is people's behavior in their natural environment that is examined here, unlike in most other studies, which rely on controlled experimental settings. In particular, the MPCs from earned and unearned income are estimated and compared across a series of (mainly nondurable) consumption categories using OLS and household fixed effect estimators applied to household panel data from four different rural, low income settings in two countries, Tanzania and China.

The results suggest that people are more likely to spend unearned income on clothing, alcohol and tobacco, transportation and communication, as well as gifts, while they are somewhat more likely to spend earned income on staple food and invest it in education. No systematic differences were revealed in spending from earned and unearned income sources on health and housing maintenance/appliances. While follow up investigation confirmed that gender preferences affect spending patterns, a larger inclination to spend more from unearned income on less basic goods than from earned income was also observed when controlling for the gender of the income recipient. This suggests that unobserved intra-household dynamics are not driving the outcomes. The results are also robust when controlling for possible differences in the expected or unexpected features of earned and unearned income or differences in their liquidity. Income levels appeared not to affect these overall patterns, but

[35] To save space, these results are not reported here, though they are available from the authors upon request.

they seem slightly stronger as long as unearned income does not overwhelm earned income.

Cognitively, the results could be understood within the context of emotional accounting, which holds that people apply emotional tags to the source of income depending on the effort they dispensed in obtaining it. As people tend to either avoid or mitigate negative emotions, they would be more pressed to spend hard earned money on non-basic goods (inducing feelings of guilt) than money obtained without much effort, or hard earned money for which the emotional negative tags have faded away. At the same time, as people also seek to perpetuate positive feelings, they may be more inclined to spend the unearned income, which evokes positive feelings, on less routine/basic, pleasure or prestige goods (or even gifts).

The findings bear on important ongoing policy debates both in western and southern economies such as the optimal modalities of social welfare policies (e.g. employment generating programs or cash transfers). Furthermore, if organizational decision making processes at the macro-level were reflective of micro-behavior, i.e. if governments were to act as individuals, the findings would also add a behavioral interpretation to the aid effectiveness debate, potentially with far reaching implications for the perceived optimality of different government financing and aid modalities (taxation, loans, grants). This, together with the cognitive and cultural appeal of the empirical findings presented here, should provide sufficient impetus for continuing research on the empirical validity of the income fungibility assumption and the importance of earning versus receiving income for spending it.

Literature

Alderman, Harold. 1996. “Saving and Economic Shocks in Rural Pakistan.” *Journal of Development Economics*. 51-2: 343-365.

Arkes, Hal R., Cynthia A. Joyner, Mark V. Pezzo, Jane Gradwohl Nash, Karen Siegel-Jacobs, and Eric Stone. 1994. "The Psychology of Windfall Gains." *Organizational Behavior and Human Decision Processes* 59(3): 331-347.

Baumeister, Roy F., Ellen Bratslavsky, Catrin Finkenauer, and Kathleen D. Vohs. 2001. “Bad is Stronger than Good.” *Review of General Psychology* 5(4): 323-370.

Bhalla, Surjit S.. 1980. “The Measurement of Permanent Income and Its Application to Savings Behavior.” *Journal of Political Economy* 80(4): 722-744.

Choi, James J., David Laibson, and Brigitte C. Madrian. 2009. "Mental Accounting in Portfolio Choice: Evidence from a Flypaper Effect." *American Economic Review* 99(5): 2085–95.

Christiaensen, L., and L. Pan. 2010a. “Transfers and Development - Easy Come, Easy Go.” WIDER Working Paper No. 2010/125.

Christiaensen, L., and L. Pan. 2010b. “Poverty Evolution and the Input Voucher program in Kilimanjaro and Ruvuma, Tanzania 2004-2009.” Report, DFID Tanzania.

Christiaensen, L., and A., Sarris, 2007. Eds. “Household Vulnerability and Insurance Against Commodity Risks: Evidence from Rural Tanzania” FAO Commodities and Trade Technical Paper No. 10: Rome.

Davies, Simon, Joshy Easaw, and Atanu Ghoshray. 2009. "Mental accounting and remittances: A study of rural Malawian households." *Journal of Economic Psychology* 30(3): 321-334.

Duflo, Esther. 2003. “Grandmothers and Granddaughters: Old-Age Pensions and Intra-household Allocation in South Africa.” *World Bank Economic Review* 17(1): 1-25.

Duflo, Esther, and Christopher Udry. 2004. “Intra-household Resource Allocation in Cote d'Ivoire: Social Norms, Separate Accounts and Consumption Choices.”, NBER Working Paper No. 10498.

Epley, Nichola, and Ayelet Gneezy**.** 2007. “The Framing of Financial Windfalls and Implications for Public Policy.” *Journal of Socio-Economics* 36: 36-47.

Friedman, Milton. 1957. “*A Theory of the Consumption Function”*. Princeton University Press.

Gitter, Seth R., and Bradford L. Barham. 2008. “Women's Power, Conditional Cash

Transfers, and Schooling in Nicaragua**."** *World Bank Economic Review* 22(2): 271-290.

Grosh Margaret, Carlo del Ninno, Emil Tesliuc and Azedine Ouerghi. 2008. *For Protection and Promotion: The Design and Implementation of Effective Safety Nets*. The World Bank.

Henderson, Pamela W., and Robert A. Peterson. 1992. "Mental accounting and categorization." *Organizational Behavior and Human Decision Processes* 51(1): 92-117.

Hirst, D. Eric, Edward J. Joyce, and Michael S. Schadewald. 1994. "Mental Accounting and Outcome Contiguity in Consumer-Borrowing Decisions." *Organizational Behavior and Human Decision Processes* 58: 136-152.

Hoddinott, John, and Lawrence Haddad. 1995. "Does Female Income Share Influence Household Expenditures? Evidence from Côte d'Ivoire." *Oxford Bulletin of Economics and Statistics* 57: 77-96.

Hsieh, Chang-Tai. 2003. "Do Consumers React to Anticipated Income Changes? Evidence from the Alaska Permanent Fund." *American Economic Review* 93(1): 397-405.

Hsieh, Chang-Tai, Satoshi, Shimizutani, and Masahiro, Hiro. 2010. "Did Japan's Shopping Coupon Program Increase Spending?" *Journal of Public Economics* 94: 523-529.

Islam, Mahnaz, and John Hoddinott. 2009. "Evidence of Intra-household Flypaper Effects from a Nutrition Intervention in Rural Guatemala." *Economic Development and Cultural Change* 57(2): 215-37.

Jacoby, Hanan. 2002. "Is There an Intra-household 'Flypaper' Effect? Evidence from a School Feeding Programme." *Economic Journal* 112: 196-221.

Kazianga, Harounan, and Christopher, Udry. 2006. "Consumption Smoothing? Livestock, Insurance and Drought in Rural Burkina Faso." *Journal of Development Economics* 79-2: 413-446.

Kooreman, Peter. 2000. "The Labeling Effect of a Child Benefit System." *American Economic Review* 90(3): 571-583.

Lazarus, Richard S., and Susan Folkman. 1984. *Stress, Appraisal, and Coping.* Springer Publishing Company.

Levav, Jonathan, and Peter Mcgraw. 2009. "Emotional Accounting: How Feelings About Money Influence Consumer Choice." *Journal of Marketing Research* 46(1): 66-80.

List, John. 2009. "Special Issue Editorial. An Introduction to Field Experiments in Economics." *Journal of Economic Behavior and Organization* 70: 443-446.

Lundberg, Shelly J., Robert A. Pollak, and Terence J. Wales. 1997. "Do Husbands and Wives Pool their Resources? Evidence from the United Kingdom Child Benefit." *Journal of*

Human Resources 32(3): 463-480.

Mas-Colell, Andreu, Michael Whinston, and Jerry Green. 1995. *Microeconomic Theory*. Oxford: Oxford University Press.

Milkman, Katherine L., and John Beshears. 2009. "Mental Accounting and Small Windfalls: Evidence from an Online Grocer." *Journal of Economic Behavior and Organization* 71(2): 384-394.

Modigliani, Franco, and Richard H. Brumberg. 1954. "Utility Analysis and the consumption Function: An Interpretation of Cross-section Data." In Post Keynesian Economics, edited by Kenneth K. Kurihara. New Brunswick, NJ.: Rutgers University Press.O'Curry, Suzanne. 1997 "Income Source Effects." Unpublished manuscript, Department of Marketing, DePaul University.

Pan, Lei, and Luc, Christiaensen. 2012. "Who is Vouching for the Input Voucher? Decentralized Targeting and Elite Capture in Tanzania." *World Development* 40 (8): 1619-1633.

Paxson, Christina. 1992. "Using Weather Variability To Estimate the Response of Savings to Transitory Income in Thailand. American Economic Review 82(1): 15-33.

Prelec, Drazen, and George Loewenstein. 1998. "The Red and the Black: Mental Accounting of Savings and Debt." *Marketing Science* 17(1): 4-28.

Rabin, Matthew. 1993. "Incorporating Fairness into Game Theory and Economics." *American Economic Review* 83(5): 1281-1302.

Read, Daniel, George Loewenstein, and Matthew Rabin. 1999. "Choice Bracketing." *Journal of Risk and Uncertainty* 19: 171-197.

Senauer, Benjamin, Marito Garcia, and Elizabeth Jacinto. 1988. "Determinants of the Intra-household Allocation of Food in the Rural Philippines." *American Journal of Agricultural Economics* 70(1): 170-180.

Shefrin, Hersh H., and Richard Thaler. 1988. "The behavioral life-cycle hypothesis." *Economic Inquiry* 26: 609-643.

Sobel, Joel. 2005. "Interdependent Preferences and Reciprocity." *Journal of Economic Literature* 43: 392-436.

Thaler, Richard. 1985. "Mental Accounting and Consumer Choice." *Marketing Science* 4: 199-213.

----, 1990. "Anomalies: Saving, Fungibility, and Mental Accounts." *Journal of Economic Perspectives* 4(1): 193-205.

Thaler, Richard, and H M, Shefrin 1981. "An Economic Theory of Self-Control." *Journal of Political Economy*. 89(2): 392-406.

Thomas, Duncan. 1990. "Intra-Household Resource Allocation: An Inferential Approach." *Journal of Human Resources* 25(4): 635-664.

Thomas, Duncan. 1993. "The Distribution of Income and Expenditure within the Household." *Annales de Economie et de Statistiques* 29: 109-136.

Villa, Kira, Christopher Barrett, and David R. Just, 2011. "Differential Nutritional Responses across Various Income Sources Among East African Pastoralists: Intra-household Effects, Missing Markets and Mental Accounting."*Journal of African Economies* 20(2): 341-375.

Table 1: Components of household income and consumption in Kilimanjaro 2003-2009

Variable	Mean[1)]	p5	p25	p50	p75	p95
Earned income	958	34	174	413	931	4,344
Crop income	212	0	43	111	245	886
Other farm income	381	0	0	45	265	1,711
Regular wage	87	0	0	0	0	765
Occasional wage	66	0	0	0	84	400
Non-farm business income	41	0	0	0	0	354
Earned non-farm income earned by male adult	147	0	0	8	177	841
Earned non-farm income earned by female adult	57	0	0	0	40	393
Earned cash income	420	0	68	200	503	1,860
Earned in kind income	451	0	55	145	335	2,056
Unearned income	88	0	0	16	113	460
Transfers	1	0	0	0	0	5
Gifts	9	0	0	0	0	78
Remittances	41	0	0	0	35	276
Pension	23	0	0	0	0	220
Unearned non-farm income received by male adult	49	0	0	0	50	300
Unearned non-farm income received by female adult	28	0	0	0	20	190
Unearned cash income	69	0	0	3	81	400
Unearned in kind income	15	0	0	0	15	100
Unearned/earned income	0.34	0.00	0.00	0.02	0.27	2.01
Consumption	1,440	356	686	1,002	1,483	3,179
Staple food[2)]	326	81	194	293	429	722
Non-staple food	371	77	196	317	494	906
Alcohol and tobacco	31	0	0	0	39	177
Housing expenditures[3)]	136	9	32	63	119	606
Transportation and communication	42	0	0	0	48	234
Clothing	49	0	10	33	72	176
Men's clothing	15	0	0	9	22	60
Women's clothing	17	0	2	11	25	62
Children's clothing	14	0	0	8	22	60
Education	55	0	0	13	51	317
Health expenditures	33	0	0	0	42	199
Gifts sent out	4	0	0	0	2	25

Note. - The unit is 1000 Tanzania Shilling (1000 Tanzania Shilling is around 0.6 Dollar). All values are in 2003 Kilimanjaro prices.

1) Top 1% of the observations are dropped when calculating the mean. 2) Staple food includes bananas, grains, potatoes and cassava. 3) Expenditures on housing include maintenance and repair expenses, rent, furniture and housing facilities, costs of electricity, water, and fuel.

Table 2: Components of household income and consumption in Ruvuma 2004-2009

Variable	Mean[1)]	p5	p25	p50	p75	p95
Earned income	699	71	217	428	860	2,499
Crop income	361	26	109	226	462	1,251
Other farm income	93	0	0	26	110	474
Regular wage	42	0	0	0	0	373
Occasional wage	38	0	0	0	44	219
Non-farm business income	70	0	0	0	82	425
Earned non-farm income earned by male adult	122	0	0	27	140	1,825
Earned non-farm income earned by female adult	36	0	0	0	20	1,019
Earned cash income	408	12	99	237	520	1,568
Earned in kind income	250	17	82	151	291	832
Unearned income	19	0	0	0	8	146
Transfers	0	0	0	0	0	0
Gifts	4	0	0	0	0	41
Remittances	10	0	0	0	0	82
Pension	0	0	0	0	0	0
Unearned non-farm income received by male adult	10	0	0	0	0	80
Unearned non-farm income received by female adult	5	0	0	0	0	41
Unearned cash income	11	0	0	0	0	82
Unearned in kind income	6	0	0	0	0	51
Unearned/earned income	0.05	0.00	0.00	0.00	0.01	0.33
Consumption	1,055	257	515	783	1,197	2,434
Staple food[2)]	333	79	188	291	437	793
Non-staple food	252	36	111	201	349	685
Alcohol and tobacco	16	0	0	0	17	99
Housing expenditures[3)]	88	8	24	45	93	318
Transport and communication	30	0	0	0	24	210
Clothing	51	0	16	36	70	169
Men's clothing	15	0	2	9	21	58
Women's clothing	18	0	5	13	26	59
Children's clothing	15	0	1	10	21	58
Education	24	0	0	5	16	155
Health expenditures	30	0	0	1	36	171
Gifts sent out	3	0	0	0	1	21

Note. - The unit is 1000 Tanzania Shilling (1000 Tanzania Shilling is around 0.6 Dollar). All values are in 2003 Kilimanjaro prices.

1) Top 1% of the observations are dropped when calculating the mean. 2) Staple food includes bananas, grains, potatoes and cassava. 3) Expenditures on housing include maintenance and repair expenses, rent, furniture and housing facilities, costs of electricity, water, and fuel.

Table 3: Components of household income and consumption in Gansu (2000-2004)

Variable	Mean	p5	p25	p50	p75	p95
Total income (including asset income)	6,360	2,372	3,999	5,598	7,807	12,537
Earned income	5,962	2,200	3,760	5,269	7,362	11,896
Income from family business (agriculture mostly)	4,623	1,434	2,563	3,930	5,721	10,130
Wage income from migrants	827	0	0	0	1,199	3,754
Other wage income	513	0	0	0	475	2,657
Earned cash income	3,387	591	1,658	2,802	4,549	8,256
Earned in-kind income	2,575	450	1,478	2,213	3,185	5,673
Unearned income (asset income excluded)	363	0	0	34	177	1,851
Remittances	128	0	0	0	0	925
Gifts	95	0	0	0	0	322
Other transfers[1)]	141	0	0	17	36	546
Survey subsidy	27	0	0	23	34	60
Relief funds	2	0	0	0	0	0
Insurance	0	0	0	0	0	0
Pension	19	0	0	0	0	0
Injury (death) compensation	59	0	0	0	0	0
Money for supporting the old	8	0	0	0	0	0
Reimbursement of medical cost	0	0	0	0	0	0
Tax refund	0	0	0	0	0	0
Forestry subsidy (*Tuigenhuanlin*)	17	0	0	0	0	93
Unearned cash income	326	0	0	25	101	1,695
Unearned in-kind income	37	0	0	0	0	199
Unearned/earned income	0.09	0.00	0.00	0.01	0.03	0.40
Total consumption	4,381	1,695	2,600	3,621	5,178	9,635
Food	2,337	1,081	1,620	2,116	2,761	4,166
Staple food[2)]	1,208	512	806	1,076	1,422	2,154
Non-staple food	1,129	345	638	937	1,414	2,456
Alcohol and tobacco	231	25	81	157	287	693
Housing expenditures [3)]	776	92	226	412	761	2,784
Transportation and communication	164	0	0	19	134	596
Clothing	223	0	20	74	193	812
Health expenditures	203	12	77	153	268	569
Education	396	0	0	92	303	1,707
Gifts sent out	86	0	0	0	52	239

Note. - The unit is Yuan (1 Yuan is around 0.12 Dollar). All values are in 1999 price of Gansu.
1) While all items were recorded in all years, subclassification of survey subsidy and insurance was only available in 2000-2002, and subclassification of the last five items of other transfers was only available in 2003-2004. 2) Staple food includes grains, potatoes and beans. 3) Housing expenditures include materials for building and decorating houses, furniture and housing facilities, costs of electricity, water and fuel.

Table 4: Components of household income and consumption in Inner Mongolia (2000-2004)

Variable	Mean	p5	p25	p50	p75	p95
Total income (including asset income)	9,716	2,770	5,724	8,626	12,281	19,963
Earned income	9,331	2,609	5,451	8,277	11,758	19,454
Income from family business (agriculture mostly)	8,334	1,894	4,562	7,308	10,638	18,135
Wage income from migrants	328	0	0	0	0	1,976
Other wage income	669	0	0	0	721	3,301
Earned cash income	5,960	840	2,844	4,915	7,890	14,671
Earned in-kind income	3,370	124	1,690	2,848	4,432	7,932
Unearned income (asset income excluded)	329	0	0	64	208	1,660
Remittances	20	0	0	0	0	0
Gifts	119	0	0	0	0	295
Other transfers[1)]	190	0	0	56	105	973
Survey subsidy	48	0	0	56	78	112
Relief funds	1	0	0	0	0	0
Insurance	0	0	0	0	0	0
Pension	0	0	0	0	0	0
Injury (death) compensation	0	0	0	0	0	0
Money for supporting the old	4	0	0	0	0	0
Reimbursement of medical cost	0	0	0	0	0	0
Tax refund	3	0	0	0	0	0
Forestry subsidy (*Tuigenhuanlin*)	94	0	0	0	0	536
Unearned cash income	254	0	0	59	141	1,025
Unearned in-kind income	75	0	0	0	0	527
Unearned/earned income	0.05	0.00	0.00	0.01	0.03	0.23
Total consumption	5,452	1,907	3,117	4,438	6,639	12,085
Food	2,297	1,175	1,692	2,171	2,734	3,949
Staple food[2)]	838	301	561	787	1,049	1,561
Non-staple food	1,459	517	942	1,340	1,820	2,830
Alcohol and tobacco	270	36	123	216	339	699
Housing expenditures [3)]	774	87	229	421	757	2,304
Transportation and communication	410	0	20	95	320	1,963
Clothing	327	0	21	92	278	1,210
Health expenditures	346	11	121	265	460	955
Education	630	0	0	154	597	3,073
Gifts sent out	312	0	0	54	277	1,045

Note. - The unit is Yuan (1 Yuan is around 0.12 Dollar). All values are in 1999 price of Inner Mongolia.
1) While all items were recorded in all years, subclassification of survey subsidy and insurance was only available in 2000-2002, and subclassification of the last five items of other transfers was only available in 2003-2004. 2) Staple food includes grains, potatoes and beans. 3) Housing expenditures include materials for building and decorating houses, furniture and housing facilities, costs of electricity, water and fuel.

Table 5: MPC from unearned income larger for non-basic consumption goods (non-staples, alcohol and tobacco, transportation and communication, clothing) and gifts; MPC from earned income at least as large as MPC from unearned income for basic consumption (staple food) and investment goods (education).

Marg.Propensity to Cons.	**Kilimanjaro**		**Ruvuma**		**Gansu**		**Inner Mongolia**	
	OLS	**hh FE**	**OLS**	**hh FE**	**OLS**	**hh FE**	**OLS**	**hh FE**
Food								
Staple food								
Earned income	0.004**	0.006**	0.026**	0.006	0.008**	0.003	0.007***	0.005**
	(1.967)	(2.071)	(3.115)	(0.499)	(2.094)	(1.041)	(4.511)	(2.734)
Unearned income	-0.001	0.035	-0.052	0.070	0.014*	0.016**	0.011	0.011
	(-0.058)	(1.222)	(-0.559)	(0.630)	(1.950)	(2.161)	(1.466)	(1.607)
Non-staple food								
Earned income	0.023***	0.013**	0.054***	0.025**	0.042***	0.001	0.039***	0.021***
	(4.646)	(2.253)	(5.849)	(2.483)	(4.193)	(0.153)	(11.800)	(5.989)
Unearned income	0.187***	0.083**	0.060	0.120	0.065***	0.045**	0.103***	0.094***
	(5.803)	(2.274)	(0.651)	(0.949)	(4.968)	(2.830)	(4.306)	(4.050)
Alcohol and tobacco								
Earned income	0.001	0.001	0.002	0.000	0.011**	0.004*	0.009***	0.006***
	(1.269)	(0.927)	(1.623)	(-0.188)	(3.004)	(1.962)	(7.965)	(4.696)
Unearned income	0.017*	0.002	0.018	0.055**	0.023**	0.017***	0.053***	0.053***
	(1.853)	(0.217)	(0.901)	(2.382)	(2.955)	(3.365)	(4.141)	(4.825)
Non-food								
Housing and appliances								
Earned income	0.018	0.013	0.020***	0.016**	0.071**	0.077**	0.054***	0.044**
	(1.237)	(0.665)	(3.828)	(2.618)	(2.886)	(2.509)	(4.968)	(3.254)
Unearned income	0.057	0.065	0.232**	0.146	0.191***	0.186***	0.043	0.048*
	(1.017)	(0.991)	(2.435)	(1.192)	(3.498)	(3.555)	(1.374)	(1.793)
Transportation and communication								
Earned income	0.005***	0.003*	0.018***	0.009**	0.026**	0.019**	0.037***	0.028***
	(3.764)	(1.838)	(4.652)	(2.126)	(2.832)	(2.367)	(7.141)	(4.315)
Unearned income	0.044***	0.037**	0.203***	0.187**	0.052**	0.038	0.047**	0.038*
	(3.597)	(2.547)	(3.658)	(2.858)	(2.328)	(1.572)	(2.568)	(1.869)
Clothing								
Earned income	0.003***	0.002*	0.019***	0.012***	0.010***	0.007**	0.016***	0.006**
	(3.995)	(1.866)	(7.526)	(4.912)	(4.040)	(2.682)	(6.674)	(2.225)
Unearned income	0.055***	0.049***	0.177***	0.170***	0.010**	0.012**	0.020**	0.025**
	(6.648)	(4.868)	(6.098)	(4.952)	(2.762)	(2.150)	(2.020)	(2.643)

Marg.Propensity to Cons.	Kilimanjaro		Ruvuma		Gansu		Inner Mongolia	
	OLS	**hh FE**	**OLS**	**hh FE**	**OLS**	**hh FE**	**OLS**	**hh FE**
Social expenditures								
Education								
Earned income	0.005**	0.002	0.008**	0.004*	0.078***	0.036**	0.029***	0.021**
	(2.653)	(1.291)	(3.112)	(1.658)	(4.060)	(2.401)	(4.350)	(2.770)
Unearned income	0.031*	0.025	0.049	0.030	0.065*	0.065	0.012	0.022
	(1.753)	(1.351)	(1.356)	(0.740)	(1.652)	(1.630)	(0.362)	(0.902)
Health expenditures								
Earned income	0.000	-0.001	0.002	0.002	0.010	0.003	-0.001	-0.009
	(-0.311)	(-0.764)	(1.060)	(0.798)	(0.918)	(0.285)	(-0.126)	(-1.142)
Unearned income	0.023**	0.009	0.094**	0.083*	0.014	0.021	0.042	0.047
	(2.245)	(0.586)	(2.422)	(1.904)	(1.023)	(1.440)	(1.247)	(1.624)
Gifts given								
Earned income	0.000	0.000	0.002***	0.001**	0.006	-0.001	0.002	0.001
	(0.853)	(0.322)	(5.080)	(3.146)	(0.886)	(-0.201)	(0.449)	(0.109)
Unearned income	0.003**	0.000	0.022***	0.022***	0.059**	0.077**	0.320***	0.307***
	(2.125)	(-0.256)	(4.320)	(3.569)	(2.228)	(2.462)	(3.592)	(3.383)

Note: Total household expenditure on each expenditure category as dependent variable. T-values are in between brackets. All regressions include time varying village fixed effects. Regressions for Kilimanjaro and Ruvuma (Tanzania) also include loans, (lagged) livestock, members of households holding elected office, gender, education and age of household head, household size, dependency ratio and female share of household labor as covariates. Observations with earned income, unearned income, loans, (lagged) livestock in the top 1% are excluded in all regressions for Tanzania. In each regression for Tanzania, observations with the dependent variable in the top 1% are excluded. Regressions for China (Gansu and Inner Mongolia) also include loans, (lagged financial assets), (lagged) value of livestock, whether business household or not, whether household rural cadre, gender, education and age of household head, household size, dependency ratio, female share of household labor, number of disabled adults aged 18-60.

Table 6: Marginal propensities of earned and unearned incomes to consume different consumption items by gender

Marginal propensity to cons.	Kilimanjaro		Ruvuma		Kilimanjaro		Ruvuma		Kilimanjaro		Ruvuma	
	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE
Food	**Staple food**				**Non-staple food**				**Alcohol and tobacco**			
Farm income	0.004	0.006**	0.052***	0.038**	0.014**	0.012*	0.048***	0.038***	0.001	0.001	0.001	-0.001
	(1.444)	(2.082)	(3.756)	(2.740)	(2.952)	(1.914)	(4.140)	(3.481)	(0.640)	(0.578)	(0.503)	(-0.576)
Earned non-farm income earned by male adults	0.007	0.006	0.002	-0.026	0.033**	0.021	0.071***	-0.001	0.001	0.002	0.008**	0.004
	(1.067)	(0.712)	(0.195)	(-1.254)	(2.186)	(1.356)	(3.671)	(-0.024)	(0.307)	(0.519)	(2.827)	(0.785)
Earned non-farm income earned by female adults	0.005	-0.008	-0.061*	-0.150**	0.100**	0.000	0.047	-0.001	0.007	0.002	-0.013**	-0.012
	(0.338)	(-0.369)	(-1.869)	(-2.763)	(2.592)	(-0.009)	(1.071)	(-0.021)	(0.745)	(0.179)	(-2.059)	(-1.448)
Unearned non-farm income received by male adults	0.029	0.055	0.191	0.498**	0.225***	0.124**	0.090	0.213	0.041**	0.024	0.045	0.080**
	(0.913)	(1.379)	(1.294)	(2.789)	(5.243)	(2.704)	(0.696)	(1.196)	(2.761)	(1.616)	(1.323)	(2.122)
Unearned non-farm income received by female adults	-0.060	-0.013	-0.332*	-0.303	0.118**	0.015	0.118	0.271	-0.019*	-0.033*	-0.038	0.033
	(-1.557)	(-0.231)	(-1.952)	(-1.283)	(1.999)	(0.216)	(0.508)	(0.711)	(-1.660)	(-1.741)	(-1.019)	(0.743)
Non-food	**Housing and household appliances**				**Transportation and communication**				**Clothing**			
Farm income	0.016	0.014	0.014**	0.012**	0.002*	0.001	0.007*	0.001	0.002**	0.001	0.010***	0.006**
	(0.803)	(0.605)	(2.460)	(2.058)	(1.739)	(0.408)	(1.898)	(0.332)	(2.816)	(1.143)	(3.828)	(2.415)
Earned non-farm income earned by male adults	0.009	-0.022	0.027**	0.016	0.012*	0.006	0.031***	0.020*	0.005*	0.003	0.030***	0.022***
	(0.619)	(-0.951)	(2.529)	(0.842)	(1.854)	(1.281)	(3.839)	(1.707)	(1.884)	(1.022)	(6.261)	(4.069)
Earned non-farm income earned by female adults	0.066	0.112	0.047	0.060	0.029**	0.025*	0.051**	0.039*	0.013	0.003	0.048***	0.043***
	(1.572)	(1.471)	(1.431)	(1.361)	(1.979)	(1.736)	(2.795)	(1.946)	(1.554)	(0.347)	(5.971)	(3.888)
Unearned non-farm income received by male adults	0.045	0.060	0.386**	0.198	0.028**	0.017	0.197**	0.154	0.052***	0.039**	0.170***	0.131**
	(0.737)	(0.694)	(2.479)	(0.894)	(1.993)	(1.121)	(2.523)	(1.613)	(4.794)	(3.046)	(4.399)	(2.748)
Unearned non-farm income received by female adults	0.045	-0.006	0.086	0.172	0.064**	0.066*	0.206*	0.228	0.055***	0.058**	0.140**	0.168**
	(0.603)	(-0.084)	(0.371)	(0.508)	(2.354)	(1.856)	(1.679)	(1.230)	(3.615)	(2.994)	(2.355)	(2.252)

	Kilimanjaro		Ruvuma		Kilimanjaro		Ruvuma		Kilimanjaro		Ruvuma	
	OLS	Hh FE	OLS	Hh FE		OLS	Hh FE	OLS	OLS	Hh FE	OLS	Hh FE
Social expenditures	**Education**				**Health expenditures**				**Gifts sent out**			
Farm income	0.002	0.002	0.006*	0.002	0.000	-0.002	0.000	0.001	0.000	0.000	0.001**	0.001
	(1.092)	(0.842)	(1.862)	(0.873)	(-0.368)	(-1.383)	(0.091)	(0.385)	(-0.859)	(-0.897)	(2.920)	(1.046)
Earned non-farm income earned by male adults	0.008	0.006	0.011**	0.006	0.001	0.003	0.004	-0.001	0.001**	0.001	0.003**	0.003**
	(1.532)	(1.161)	(2.075)	(0.935)	(0.289)	(0.648)	(1.025)	(-0.260)	(2.223)	(1.639)	(2.625)	(2.063)
Earned non-farm income earned by female adults	0.033*	-0.001	0.008	0.014	-0.004	0.003	0.004	0.014	0.000	-0.001	0.006**	0.006*
	(1.923)	(-0.093)	(0.608)	(0.768)	(-0.503)	(0.376)	(0.428)	(0.902)	(-0.053)	(-0.603)	(3.152)	(1.817)
Unearned non-farm income received by male adults	0.018	0.014	0.019	-0.058	0.041**	0.038*	0.072	0.038	-0.001	-0.003	0.019**	0.016**
	(0.770)	(0.596)	(0.363)	(-1.034)	(2.674)	(1.673)	(1.164)	(0.583)	(-0.833)	(-1.544)	(2.945)	(2.143)
Unearned non-farm income received by female adults	0.040	0.029	0.131	0.185	0.001	-0.037	0.104	0.125	0.008**	0.004	0.019**	0.021
	(1.124)	(0.783)	(1.166)	(1.341)	(0.090)	(-1.524)	(1.381)	(1.390)	(2.897)	(1.044)	(2.211)	(1.571)

Note: Total household expenditure on each expenditure category as dependent variable. T-values are in between brackets. All regressions include time varying village fixed effects. Regressions also include loans, (lagged) livestock, members of households holding elected office, gender, education and age of household head, household size, dependency ratio and female share of household labor as covariates. Observations with earned income, unearned income, loans, (lagged) livestock in the top 1% are excluded in all regressions. In each regression, observations with the dependent variable in the top 1% are excluded.

Table 7: The MPC from anticipated unearned income tends to be larger for non-basic goods and smaller for basic goods (staples) and education.

	Kilimanjaro	Ruvuma	GS	IM	Kilimanjaro	Ruvuma	GS	IM	Kilimanjaro	Ruvuma	GS	IM
Food	**Staple food**				**Non-staple food**				**Alcohol and tobacco**			
Expected earned income	0.003	0.050***	0.019***	0.008**	0.030**	0.087***	0.111***	0.055***	-0.001	0.003**	0.023***	0.012***
	(0.979)	(4.362)	(3.549)	(2.594)	(3.246)	(7.196)	(7.373)	(7.173)	(-0.620)	(1.993)	(3.966)	(6.071)
Expected unearned income	-0.031	-0.206	0.028	0.006	0.358***	-0.144	0.116**	0.147***	0.030**	-0.036	0.036**	0.066**
	(-0.719)	(-1.200)	(1.528)	(0.390)	(5.300)	(-0.946)	(2.901)	(4.017)	(2.079)	(-1.222)	(2.116)	(3.029)
Non-food	**Housing and household appliances**				**Transportation and communication**				**Clothing**			
Expected earned income	0.028**	0.022***	0.076***	0.061***	0.009***	0.029***	0.037**	0.045***	0.005**	0.028***	0.017***	0.025***
	(2.363)	(3.359)	(3.399)	(4.241)	(4.483)	(4.890)	(2.876)	(6.715)	(3.204)	(6.544)	(4.798)	(4.202)
Expected unearned income	0.083	0.373**	0.256***	0.076	0.079***	0.242**	0.071**	0.070**	0.071***	0.186***	0.011	0.015
	(0.886)	(2.496)	(4.590)	(0.983)	(3.593)	(2.855)	(2.148)	(1.991)	(4.957)	(4.363)	(1.608)	(0.906)
Social expenditures	**Education**				**Health expenditures**				**Gifts sent out**			
Expected earned income	0.007**	0.015**	0.160***	0.037**	0.002	0.004	0.021	0.012	0.000**	0.003***	0.015	0.005
	(2.065)	(3.272)	(3.526)	(3.137)	(1.283)	(1.430)	(1.165)	(1.197)	(2.293)	(5.794)	(1.040)	(0.891)
Expected unearned income	0.054*	0.111	0.07	-0.033	0.038**	0.165**	-0.009	0.066	0.006**	0.020**	0.024	0.372***
	(1.698)	(1.560)	(0.816)	(-0.457)	(2.206)	(3.028)	(-0.305)	(0.896)	(2.802)	(2.170)	(0.803)	(3.866)

Note: Total household expenditure on each expenditure category as dependent variable. Bootstrapped T-values are in between brackets. All regressions include time varying village fixed effects. Regressions for Kilimanjaro and Ruvuma (Tanzania) also include loans, (lagged) livestock, members of households holding elected office, gender, education and age of household head, household size, dependency ratio and female share of household labor as covariates. Observations with earned income, unearned income, loans, (lagged) livestock in the top 1% are excluded in all regressions for Tanzania. In each regression for Tanzania, observations with the dependent variable in the top 1% are excluded. Regressions for China (Gansu and Inner Mongolia) also include loans, (lagged) financial assets, (lagged) value of livestock, whether business household or not, whether household rural cadre, gender, education and age of household head, household size, dependency ratio, female share of household labor, number of disabled adults aged 18-60.

Table 8: When considering cash income separately, MPC from unearned income remains larger for non-basic consumption goods (non-staples, alcohol and tobacco, transportation and communication, clothing).

Marg.Propensity to Cons.	Kilimanjaro		Ruvuma		Gansu		Inner Mongolia	
	OLS	hh FE	OLS	hh FE	OLS	hh FE	OLS	hh FE
Food								
Staple food								
Earned income in cash	0.004	0.004	0.018*	-0.014	0.008**	0.003	0.005**	0.005**
	(1.335)	(1.274)	(1.887)	(-0.861)	(2.135)	(0.775)	(3.252)	(2.412)
Earned income in kind	0.003	0.008**	0.040**	0.030*	0.007	0.002	0.011***	0.005*
	(1.206)	(2.215)	(2.086)	(1.653)	(1.056)	(0.772)	(3.786)	(1.841)
Unearned income in cash	0.016	0.042	-0.112	0.090	0.012*	0.014*	0.011	0.012
	(0.599)	(1.225)	(-0.849)	(0.543)	(1.755)	(1.884)	(1.419)	(1.622)
Unearned income in kind	-0.086	0.010	0.085	0.106	0.087*	0.115*	0.006	-0.005
	(-1.055)	(0.102)	(0.372)	(0.358)	(1.826)	(1.914)	(0.212)	(-0.174)
Non-staple food								
Earned income in cash	0.025**	0.008	0.071***	0.027	0.060***	0.013*	0.039***	0.019***
	(1.964)	(0.716)	(6.034)	(1.631)	(6.892)	(1.914)	(11.002)	(4.808)
Earned income in kind	0.008	0.006	0.028**	0.023*	0.017**	-0.01	0.039***	0.027***
	(1.556)	(1.000)	(2.171)	(1.862)	(2.224)	(-1.217)	(6.718)	(4.737)
Unearned income in cash	0.197***	0.099**	-0.087	-0.029	0.070***	0.049**	0.108***	0.098***
	(5.105)	(2.337)	(-0.658)	(-0.141)	(5.405)	(3.130)	(4.314)	(4.081)
Unearned income in kind	0.137	-0.002	0.318	0.422	0.098	0.007	-0.055	-0.073
	(1.349)	(-0.025)	(1.594)	(1.431)	(1.565)	(0.081)	(-1.135)	(-1.483)
Alcohol and tobacco								
Earned income in cash	0.001	0.001	0.003	0.000	0.018***	0.007**	0.010***	0.007***
	(1.038)	(1.180)	(1.526)	(0.030)	(8.250)	(3.112)	(7.677)	(4.823)
Earned income in kind	0.000	0.000	0.001	-0.001	0.000	0.000	0.006**	0.005**
	(0.175)	(0.060)	(0.541)	(-0.457)	(0.006)	(-0.036)	(3.144)	(2.538)
Unearned income in cash	0.019*	0.004	0.031	0.048	0.025**	0.018***	0.056***	0.056***
	(1.742)	(0.290)	(0.871)	(1.324)	(3.244)	(3.601)	(4.201)	(4.876)
Unearned income in kind	0.005	-0.005	-0.010	0.067	0.023	0.009	-0.050*	-0.045**
	(0.237)	(-0.140)	(-0.233)	(1.498)	(0.986)	(0.327)	(-1.850)	(-2.185)
Non-food								
Housing and appliances								
Earned income in cash	0.028	0.025	0.029***	0.022*	0.078***	0.089***	0.066***	0.059***
	(1.172)	(0.862)	(3.534)	(1.955)	(5.116)	(4.717)	(4.963)	(3.530)
Earned income in kind	-0.007*	-0.013*	0.004	0.008	0.063	0.067	0.021	0.018
	(-1.657)	(-1.740)	(0.654)	(1.207)	(1.248)	(1.352)	(1.591)	(1.138)

Marg.Propensity to Cons.	Kilimanjaro		Ruvuma		Gansu		Inner Mongolia	
	OLS	hh FE	OLS	hh FE	OLS	hh FE	OLS	hh FE
Unearned income in cash	0.035	0.021	-0.036	-0.182	0.195***	0.195***	0.054*	0.057**
	(0.813)	(0.448)	(-0.373)	(-1.172)	(3.518)	(3.674)	(1.829)	(2.111)
Unearned income in kind	0.170	0.274	0.730**	0.771**	0.13	-0.077	-0.303*	-0.137
	(0.794)	(1.027)	(2.642)	(2.593)	(0.826)	(-0.369)	(-1.713)	(-0.604)
Transportation and communication								
Earned income in cash	0.008***	0.004**	0.027***	0.013**	0.042***	0.035**	0.045***	0.036***
	(4.046)	(2.679)	(6.055)	(2.199)	(4.690)	(3.111)	(7.680)	(5.073)
Earned income in kind	0.001	0.000	0.003	0.003	0.003	0.004	0.01	0.01
	(0.614)	(-0.108)	(0.538)	(0.565)	(0.547)	(0.836)	(0.849)	(0.869)
Unearned income in cash	0.037**	0.035**	0.148*	0.080	0.056**	0.04	0.049**	0.039**
	(2.441)	(2.015)	(1.867)	(0.883)	(2.478)	(1.634)	(2.604)	(1.971)
Unearned income in kind	0.079*	0.043	0.298**	0.399**	0.107	0.137	0.025	0.051
	(1.746)	(1.126)	(2.218)	(2.547)	(0.755)	(0.837)	(0.203)	(0.328)
Clothing								
Earned income in cash	0.004**	0.001	0.029***	0.023***	0.016***	0.013***	0.017***	0.006**
	(2.213)	(1.328)	(11.079)	(7.737)	(6.747)	(3.675)	(7.053)	(2.354)
Earned income in kind	0.001	0.001	0.003	0.001	0.002	0.001	0.013**	0.008*
	(1.012)	(0.897)	(1.321)	(0.452)	(1.643)	(0.512)	(3.083)	(1.660)
Unearned income in cash	0.046***	0.045***	0.133***	0.110**	0.011**	0.014**	0.022**	0.026**
	(4.818)	(3.925)	(3.640)	(2.369)	(3.123)	(2.500)	(2.217)	(2.674)
Unearned income in kind	0.102**	0.071**	0.244***	0.259**	0.044*	0.011	-0.038	0.009
	(3.058)	(2.078)	(3.576)	(2.917)	(1.651)	(0.358)	(-1.035)	(0.273)
Social expenditures								
Education								
Earned income in cash	0.006*	0.001	0.012***	0.007*	0.064***	0.016	0.056***	0.043***
	(1.819)	(0.683)	(3.507)	(1.849)	(3.797)	(1.158)	(6.770)	(4.452)
Earned income in kind	0.000	0.001	0.001	0.000	0.101***	0.056***	-0.034**	-0.017*
	(0.111)	(0.479)	(0.358)	(0.104)	(3.685)	(3.879)	(-2.736)	(-1.826)
Unearned income in cash	0.017	0.019	0.079	0.047	0.063	0.066*	0.013	0.028
	(0.845)	(0.929)	(1.351)	(0.741)	(1.621)	(1.671)	(0.375)	(1.111)
Unearned income in kind	0.105*	0.055	-0.020	-0.019	-0.091	-0.283	0.057	-0.037
	(1.717)	(1.259)	(-0.287)	(-0.246)	(-1.135)	(-1.141)	(0.519)	(-0.411)
Health expenditures								
Earned income in cash	0.000	0.000	0.004	0.005	0.020	0.016	0.000	-0.007
	(-0.132)	(0.150)	(1.559)	(1.261)	(1.368)	(0.813)	(0.017)	(-0.862)

Marg.Propensity to Cons.	Kilimanjaro		Ruvuma		Gansu		Inner Mongolia	
	OLS	hh FE	OLS	hh FE	OLS	hh FE	OLS	hh FE
Earned income in kind	0.000	-0.002	-0.001	-0.001	-0.006	-0.009	-0.007	-0.015*
	(-0.102)	(-0.813)	(-0.320)	(-0.525)	(-0.830)	(-1.014)	(-0.874)	(-1.659)
Unearned income in cash	0.026**	0.005	0.071*	0.002	0.017	0.024	0.043	0.047
	(2.186)	(0.264)	(1.719)	(0.037)	(1.195)	(1.544)	(1.252)	(1.600)
Unearned income in kind	0.005	0.033	0.136	0.248**	0.03	0.02	0.026	0.077
	(0.186)	(1.159)	(1.609)	(2.421)	(0.717)	(0.274)	(0.139)	(0.438)
Gifts given								
Earned income in cash	0.000	0.000	0.003***	0.002**	0.013	0.005	0.007	0.005
	(0.887)	(0.160)	(4.443)	(2.530)	(1.484)	(0.318)	(1.315)	(0.857)
Earned income in kind	0.000	0.000	0.001	0.001	-0.005	-0.008*	-0.014**	-0.011
	(-0.628)	(-0.634)	(1.643)	(1.193)	(-1.488)	(-1.834)	(-2.127)	(-1.493)
Unearned income in cash	0.001	-0.003*	0.014**	0.007	0.062**	0.080**	0.335***	0.322***
	(0.363)	(-1.755)	(2.124)	(0.966)	(2.291)	(2.434)	(3.774)	(3.563)
Unearned income in kind	0.014**	0.014**	0.036**	0.052**	-0.001	0.022	-0.165**	-0.159*
	(2.352)	(2.077)	(2.883)	(3.181)	(-0.042)	(0.470)	(-1.982)	(-1.707)

Note: Total household expenditure on each expenditure category as dependent variable. T-values are in between brackets. All regressions include time varying village fixed effects. Regressions for Kilimanjaro and Ruvuma (Tanzania) also include loans, (lagged) livestock, members of households holding elected office, gender, education and age of household head, household size, dependency ratio and female share of household labor as covariates. Observations with earned income, unearned income, loans, (lagged) livestock in the top 1% are excluded in all regressions for Tanzania. In each regression for Tanzania, observations with the dependent variable in the top 1% are excluded. Regressions for China (Gansu and Inner Mongolia) also include loans, (lagged) financial assets, (lagged) value of livestock, whether business household or not, whether household rural cadre, gender, education and age of household head, household size, dependency ratio, female share of household labor, number of disabled adults aged 18-60.

Appendix

Table A1: Household characteristics of rural households in Tanzania

Variables	Explanation	mean	sd	min	max
Kilimanjaro					
Loans	In 1000Tsh	8	33	0	372
Owned livestock	In 1000Tsh	208	211	0	1,316
Household member holds elected position	Dummy:=1 if household member holds elected position; 0 if not	0.32	0.47	0	1
Household size	Size of the household	5.40	2.38	1	20
Female labor ratio	Female 16<=age<=60/(household labor+1)	0.32	0.19	0	0.83
Dependency ratio	(household size – member 16<=age<=60)/member 16<=age<=60	0.53	0.24	0	1
Gender household head	Dummy:=1 if gender of household head is male; 0 if not	0.87	0.34	0	1
Age household head	Age of household head	55.27	15.18	0	110
Education level household head	Years of education	5.67	3.26	0	18
Illiterate rate	Percentage of illiterate household members	0.07	0.15	0	1
Ruvuma					
Loans	In 1000Tsh	6	23	0	179
Owned livestock	In 1000Tsh	99	141	0	863
Household member holds elected position	Dummy:=1 if household member holds elected position; 0 if not	0.36	0.48	0	1
Household size	Size of the household	5.16	2.18	1	14
Female labor ratio	Female 16<=age<=60/(household labor+1)	0.33	0.17	0	0.83
Dependency ratio	(household size – member 16<=age<=60)/member 16<=age<=60	0.48	0.23	0	1
Gender household head	Dummy:=1 if gender of household head is male; 0 if not	0.92	0.27	0	1
Age household head	Age of household head	45.05	13.86	0	90
Education level household head	Years of education	5.74	2.83	0	14
Illiterate rate	Percentage of illiterate household members	0.06	0.16	0	2

Note.-Based on all 3 survey rounds in 2003-2009.

Table A2: Household characteristics of rural households in China

Variables	Explanation	mean	sd	min	max
Gansu					
Loans	In Yuan	490	2,202	0	75,075
Financial assets	In Yuan	1,462	2,020	0	26,405
Owned livestock	In Yuan	953	953	0	14,985
Business household	Dummy:=1 if household is a business household; 0 if not	0.07	0.26	0	1
Rural cadres' household	Dummy:=1 if household is a cadres' household; 0 if not	0.07	0.25	0	1
Household size	Size of the household	4.77	1.34	0	10
Female labor ratio	Female 16<=age<=60/household labor	0.48	0.15	0	1
Dependency ratio	(household size - member 16<=age<=60)/member 16<=age<=60	0.29	0.21	0	1
Gender household head	Dummy:=1 if gender of household head is male; 0 if not	1.00	0.06	0	1
Age household head	Age of household head	41.88	11.10	5	83
Education level household head	Years of education	6.85	3.66	0	16
No. of disabled people	No. of disabled people 16<=age<=60	0.07	0.29	0	3
Inner Mongolia					
Loans	In Yuan	1,404	3,358	0	63,800
Financial assets	In Yuan	2,784	3,357	2	33,646
Owned livestock	In Yuan	1,285	3,948	0	61,763
Business household	Dummy:=1 if household is a business household; 0 if not	0.03	0.18	0	1
Rural cadres' household	Dummy:=1 if household is a cadres' household; 0 if not	0.04	0.19	0	1
Household size	Size of the household	3.72	0.98	1	8
Female labor ratio	Female 16<=age<=60/household labor	0.48	0.15	0	1
Dependency ratio	(household size - member 16<=age<=60)/member 16<=age<=60	0.22	0.20	0	1
Gender household head	Dummy:=1 if gender of household head is male; 0 if not	0.99	0.09	0	1
Age household head	Age of household head	44.10	8.89	23	78
Education level household head	Years of education	8.25	2.50	0	16
No. of disabled people	No. of disabled people 16<=age<=60	0.08	0.40	0	4

Note. - Based on all 5 survey rounds in 2000-2004.

Table A3: MPC from unearned income on male, female and children clothing larger than MPC from earned income

Marginal propensity to consume	Kilimanjaro		Ruvuma	
	OLS	hh FE	OLS	hh FE
Men's clothes				
Earned income	0.001***	0.001	0.006***	0.004***
	(3.731)	(1.606)	(7.208)	(4.408)
Unearned income	0.014***	0.011**	0.059***	0.055***
	(4.679)	(2.942)	(5.920)	(4.271)
Women's clothes				
Earned	0.001***	0.000	0.007***	0.004***
	(3.504)	(1.130)	(7.339)	(5.018)
Unearned income	0.017***	0.012**	0.056***	0.052***
	(5.660)	(3.035)	(5.566)	(4.376)
Children's clothes				
Earned	0.001***	0.001	0.004***	0.002**
	(3.627)	(1.473)	(5.139)	(2.355)
Unearned income	0.014***	0.013***	0.045***	0.036**
	(4.748)	(3.997)	(4.744)	(3.159)

Note: Total household expenditure on each expenditure category as dependent variable. T-values are in between brackets. Regressions include time varying village fixed effects. Regressions also include loans, (lagged) livestock, members of households holding elected office, gender, education and age of household head, household size, dependency ratio and female share of household labor as covariates. Observations with earned income, unearned income, loans, (lagged) livestock in the top 1% are excluded in all regressions In each regression observations with the dependent variable in the top 1% are excluded.

Table A4: Marginal propensity of unearned income to consume men's women's and children's larger for both males and females

Marginal propensity to consume from	Men's clothes				Women's clothes				Children's clothes			
	Kilimanjaro		Ruvuma		Kilimanjaro		Ruvuma		Kilimanjaro		Ruvuma	
	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE
Farm income	0.001**	0.000	0.004***	0.003**	0.001**	0.000	0.004***	0.003**	0.001**	0.001	0.002**	0.001
	(2.087)	(0.486)	(3.781)	(2.519)	(2.661)	(0.847)	(4.183)	(3.230)	(2.174)	(1.416)	(2.067)	(1.400)
Earned non-farm income earned by male adult	0.003**	0.003**	0.011***	0.009***	0.001	0.001	0.009***	0.005**	0.001	-0.001	0.006***	0.001
	(2.438)	(2.160)	(5.993)	(4.203)	(0.840)	(0.557)	(5.854)	(2.754)	(0.708)	(-1.080)	(3.461)	(0.242)
Earned non-farm income earned by female adult	0.003	0.000	0.012***	0.007*	0.005	0.000	0.016***	0.015***	0.008**	0.006*	0.015***	0.017**
	(1.120)	(0.109)	(4.248)	(1.870)	(1.308)	(0.050)	(4.799)	(3.334)	(2.514)	(1.782)	(4.105)	(3.295)
Unearned non-farm income received by male adult	0.019***	0.012**	0.064***	0.049**	0.014***	0.008*	0.046***	0.041**	0.013***	0.012**	0.053***	0.030*
	(4.351)	(2.426)	(4.497)	(2.744)	(3.711)	(1.721)	(3.391)	(2.279)	(3.389)	(2.452)	(4.145)	(1.841)
Unearned non-farm income received by female adult	0.005	0.006	0.039**	0.053**	0.022***	0.017**	0.064**	0.055*	0.012**	0.011**	0.015	0.030
	(1.196)	(1.107)	(2.095)	(2.065)	(3.580)	(2.313)	(2.548)	(1.847)	(2.317)	(2.083)	(0.804)	(1.139)

Note: Total household expenditure on each expenditure category as dependent variable. T-values are in between brackets. Regressions include time varying village fixed effects. Regressions also include loans, (lagged) livestock, members of households holding elected office, gender, education and age of household head, household size, dependency ratio and female share of household labor as covariates. Observations with earned income, unearned income, loans, (lagged) livestock in the top 1% are excluded in all regressions In each regression observations with the dependent variable in the top 1% are excluded.

Table A5: The higher MPC from unearned income on non-basic goods and its lower MPC on staples and education are not in response to shocks.

Marginal prop to consume	Kilimanjaro		Ruvuma		Kilimanjaro		Ruvuma		Kilimanjaro		Ruvuma	
	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE	OLS	Hh FE
Food	**Staple food**				**Non-staple food**				**Alcohol and tobacco**			
Earned income	0.003	0.005*	0.026**	0.007	0.022***	0.011**	0.054***	0.025**	0.001	0.001	0.002	0.000
	(1.622)	(1.888)	(3.110)	(0.546)	(4.506)	(1.987)	(5.816)	(2.477)	(1.103)	(0.664)	(1.617)	(-0.071)
Unearned income	0.009	0.035	-0.075	0.019	0.201***	0.076**	0.052	0.061	0.019**	0.003	0.021	0.054**
	(0.387)	(1.225)	(-0.782)	(0.169)	(6.341)	(2.088)	(0.560)	(0.456)	(2.010)	(0.242)	(1.034)	(2.360)
Non-food	**Housing and household appliances**				**Transportation and communication**				**Clothing**			
Earned income	0.019	0.014	0.020***	0.016**	0.005***	0.003*	0.017***	0.009**	0.003***	0.002*	0.019***	0.012***
	(1.273)	(0.705)	(3.886)	(2.565)	(3.707)	(1.765)	(4.532)	(2.148)	(3.803)	(1.839)	(7.367)	(4.724)
Unearned income	0.063	0.070	0.219**	0.104	0.045***	0.034**	0.200***	0.179**	0.057***	0.048***	0.170***	0.160***
	(1.074)	(1.039)	(2.271)	(0.841)	(3.507)	(2.353)	(3.567)	(2.533)	(6.784)	(4.749)	(5.884)	(4.714)
Social expenditures	**Education**				**Health expenditures**				**Gifts sent out**			
Earned income	0.005**	0.002	0.007**	0.005*	0.000	-0.001	0.001	0.002	0.000	0.000	0.002***	0.001**
	(2.629)	(1.258)	(2.979)	(1.867)	(-0.103)	(-0.661)	(0.625)	(0.690)	(0.831)	(0.308)	(4.961)	(2.949)
Unearned income	0.033*	0.020	0.046	0.025	0.022**	0.008	0.084**	0.070	0.003**	-0.001	0.021***	0.021***
	(1.830)	(1.090)	(1.245)	(0.628)	(2.136)	(0.505)	(2.255)	(1.612)	(2.004)	(-0.429)	(4.291)	(3.458)

Note: Total household expenditure on each expenditure category as dependent variable. T-values are in between brackets. All regressions include time varying village fixed effects. Five self-reported shocks are included: drought, harvest losses, theft, loss of livestock, illness and death of household members. They are all dummy variables. Regressions also include loans, (lagged) livestock, members of households holding elected office, gender, education and age of household head, household size, dependency ratio and female share of household labor as covariates. Observations with earned income, unearned income, loans, (lagged) livestock in the top 1% are excluded in all regressions. In each regression, observations with the dependent variable in the top 1% are excluded.

Table A6: There is no systematic difference in the results for the poor and the rich

Marginal propensity to consume	Kilimanjaro		Ruvuma		Gansu		Inner Mongolia	
	OLS	hh FE	OLS	hh FE	OLS	hh FE	OLS	hh FE
Food								
Staple food								
Earned income poor half	0.003	0.005	0.033**	0.034*	0.012**	0.010	0.008***	0.012***
	(0.793)	(1.124)	(1.965)	(1.871)	(2.660)	(1.637)	(4.078)	(3.442)
Earned income rich half	0.005*	0.006*	0.025**	-0.010	0.007**	0.001	0.006***	0.002
	(1.856)	(1.747)	(2.935)	(-0.713)	(1.963)	(0.263)	(4.394)	(0.994)
Unearned income poor half	-0.068	0.027	0.018	0.101	0.001	0.020**	0.009	0.018
	(-1.583)	(0.474)	(0.109)	(0.490)	(0.060)	(1.968)	(0.846)	(1.516)
Unearned income rich half	0.016	0.038	-0.094	0.021	0.023**	0.013	0.012	0.008
	(0.647)	(1.139)	(-0.873)	(0.163)	(2.726)	(1.213)	(1.284)	(1.026)
Non-staple food								
Earned income poor half	0.012**	0.015**	0.037**	0.039**	0.036***	0.025***	0.033***	0.032***
	(2.192)	(2.413)	(2.589)	(2.359)	(3.876)	(3.501)	(9.080)	(5.791)
Earned income rich half	0.027***	0.011	0.060***	0.016	0.042***	-0.007	0.039***	0.016***
	(4.457)	(1.398)	(6.431)	(1.299)	(4.021)	(-0.921)	(11.281)	(3.776)
Unearned income poor half	0.070	0.068	0.118	0.289	0.046**	0.070**	0.031	0.036
	(1.373)	(1.048)	(0.775)	(1.372)	(2.472)	(3.039)	(1.329)	(1.241)
Unearned income rich half	0.218***	0.087**	0.047	0.018	0.073***	0.026*	0.135***	0.119***
	(6.027)	(2.006)	(0.437)	(0.117)	(4.394)	(1.690)	(4.393)	(4.188)
Alcohol and tobacco								
Earned income poor half	0.000	0.000	0.000	0.001	0.009**	0.008**	0.008***	0.008***
	(0.039)	(0.207)	(-0.317)	(0.634)	(2.709)	(3.244)	(6.353)	(5.440)
Earned income rich half	0.002	0.001	0.003*	-0.001	0.011**	0.002	0.009***	0.005**
	(1.602)	(0.896)	(1.935)	(-0.572)	(2.885)	(1.198)	(7.388)	(2.831)
Unearned income poor half	0.002	0.007	0.077*	0.120**	0.010	0.018**	0.021	0.032**
	(0.146)	(0.443)	(1.673)	(2.558)	(1.523)	(2.917)	(1.586)	(2.314)
Unearned income rich half	0.021*	0.001	-0.008	0.020	0.029**	0.017**	0.068***	0.062***

Marginal propensity to consume	Kilimanjaro		Ruvuma		Gansu		Inner Mongolia	
	OLS	hh FE	OLS	hh FE	OLS	hh FE	OLS	hh FE
	(1.925)	(0.066)	(-0.415)	(0.867)	(2.819)	(2.365)	(4.521)	(4.741)
Non-food								
Housing and appliances								
Earned income poor half	0.004	-0.001	0.015	0.020*	0.089***	0.106***	0.044***	0.054***
	(0.660)	(-0.153)	(1.423)	(1.881)	(3.820)	(3.768)	(4.564)	(3.696)
Earned income rich half	0.025	0.020	0.021***	0.013*	0.067**	0.066*	0.055***	0.040**
	(1.218)	(0.701)	(4.099)	(1.811)	(2.775)	(1.931)	(4.792)	(2.315)
Unearned income poor half	0.041	-0.001	0.200	0.258	0.097**	0.141**	0.042	0.080
	(0.471)	(-0.011)	(1.366)	(1.542)	(2.172)	(2.964)	(0.779)	(1.296)
Unearned income rich half	0.059	0.094	0.254**	0.078	0.253***	0.222**	0.041	0.035
	(1.064)	(1.114)	(2.043)	(0.464)	(3.691)	(2.860)	(1.186)	(1.287)
Transportation and communication								
Earned income poor half	0.001	0.001	0.008*	0.007	0.038***	0.040**	0.034***	0.033***
	(0.952)	(0.238)	(1.699)	(1.470)	(3.464)	(2.183)	(5.250)	(3.546)
Earned income rich half	0.006***	0.004**	0.021***	0.010*	0.023**	0.012*	0.037***	0.025***
	(3.735)	(2.075)	(5.043)	(1.712)	(2.764)	(1.851)	(7.120)	(3.377)
Unearned income poor half	0.036*	0.015	0.222**	0.189*	0.023	0.008	0.056**	0.042
	(1.903)	(0.659)	(2.639)	(1.961)	(1.420)	(0.285)	(2.082)	(1.215)
Unearned income rich half	0.046**	0.045**	0.205**	0.189**	0.074**	0.062**	0.043*	0.036
	(3.210)	(2.431)	(2.859)	(2.133)	(2.516)	(2.023)	(1.876)	(1.518)
Clothing								
Earned income poor half	0.001	0.000	0.015***	0.015***	0.009***	0.011**	0.013***	0.004
	(0.853)	(0.425)	(3.747)	(3.337)	(3.312)	(2.488)	(6.165)	(1.601)
Earned income rich half	0.005***	0.002*	0.020***	0.011***	0.010***	0.005**	0.017***	0.007**
	(4.418)	(1.907)	(8.199)	(3.642)	(4.012)	(2.487)	(6.437)	(1.996)
Unearned income poor half	0.045**	0.049**	0.227***	0.236***	0.013**	0.019**	0.003	0.012*
	(2.940)	(2.507)	(3.545)	(3.375)	(2.122)	(2.437)	(0.345)	(1.697)

Marginal propensity to consume	Kilimanjaro		Ruvuma		Gansu		Inner Mongolia	
	OLS	hh FE	OLS	hh FE	OLS	hh FE	OLS	hh FE
Unearned income rich half	0.057***	0.050***	0.156***	0.132***	0.008*	0.007	0.027**	0.031**
	(6.396)	(4.295)	(5.281)	(3.509)	(1.915)	(0.957)	(2.287)	(2.613)
Social expenditures								
Education								
Earned income poor half	0.001	-0.002	0.000	0.002	0.065***	0.023	0.026**	0.034**
	(0.566)	(-0.873)	(0.089)	(0.715)	(3.485)	(1.315)	(2.770)	(2.522)
Earned income rich half	0.006**	0.005**	0.010***	0.005	0.080***	0.040**	0.030***	0.016**
	(2.818)	(2.094)	(3.601)	(1.411)	(4.205)	(2.413)	(4.538)	(2.124)
Unearned income poor half	0.049	0.063**	0.107*	0.077	0.012	0.009	0.046	0.111*
	(1.535)	(2.123)	(1.771)	(1.231)	(0.383)	(0.511)	(0.636)	(1.818)
Unearned income rich half	0.025	0.013	0.028	0.007	0.088*	0.108	-0.005	-0.016
	(1.278)	(0.592)	(0.661)	(0.132)	(1.672)	(1.618)	(-0.152)	(-0.680)
Health expenditures								
Earned income poor half	0.000	-0.003*	0.002	0.006	0.005	0.002	-0.003	0.009
	(-0.170)	(-1.948)	(0.521)	(1.513)	(0.378)	(0.096)	(-0.492)	(0.986)
Earned income rich half	0.000	0.000	0.002	-0.001	0.011	0.004	0.002	-0.016*
	(-0.265)	(0.000)	(1.047)	(-0.226)	(1.001)	(0.296)	(0.341)	(-1.838)
Unearned income poor half	0.027	-0.002	0.040	0.049	0.021	0.029	0.189*	0.178*
	(1.350)	(-0.058)	(0.713)	(0.791)	(1.261)	(1.512)	(1.687)	(1.710)
Unearned income rich half	0.022*	0.014	0.119**	0.096*	0.008	0.014	-0.026	-0.010
	(1.865)	(0.722)	(2.489)	(1.688)	(0.388)	(0.691)	(-1.267)	(-0.546)
Gifts sent out								
Earned income poor half	0.000	0.000	0.002***	0.002**	0.003	-0.002	-0.001	-0.011
	(-0.016)	(0.293)	(3.427)	(2.467)	(0.426)	(-0.221)	(-0.108)	(-1.183)
Earned income rich half	0.000	0.000	0.002***	0.001**	0.006	-0.002	0.001	0.005
	(0.988)	(0.142)	(4.762)	(2.043)	(0.844)	(-0.219)	(0.140)	(0.679)
Unearned income poor half	0.003	0.004*	0.026**	0.029**	0.006	0.013	0.206*	0.146

Marginal propensity to consume	Kilimanjaro		Ruvuma		Gansu		Inner Mongolia	
	OLS	hh FE	OLS	hh FE	OLS	hh FE	OLS	hh FE
	(1.591)	(1.674)	(2.683)	(2.636)	(0.519)	(1.031)	(1.806)	(1.130)
Unearned income rich half	0.003*	-0.002	0.020***	0.019**	0.087**	0.128**	0.373***	0.377***
	(1.720)	(-1.048)	(3.432)	(2.440)	(2.315)	(2.676)	(3.477)	(3.609)

Note: See Table 7.