

EXPENDITURES

DRAFT

Ricardo Godoy

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Chapter 8

Expenditures

Summary: *Aims:* 1/ Describe cash expenditures and good received in barter and 2/ assess the propensity to buy luxuries, measure sex differences in expenditures and barter, and estimate poverty using headcount measures of income and consumption. *Methods:* Data comes from adults' answers about asset purchases the past year and expenditure and value of goods received in barter the past fortnight. *Data:* Yearly surveys used to a/ measure purchase of durable assets (2004-2011), b/ expenditures (2004-2011), and c/ value of goods received in barter (2002-2010). Data showed digit heaping around multiples of five; data on expenditures and barter showed forward telescoping bias. *Findings:* 1/ Autarky. 27% of the sample did not handle cash. 22% percent did not buy an asset the past year; during the fortnight before the interview, 58% did not spend cash and 20% did not obtain goods in barter. Autarkists probably got market goods through third parties. 2/ Goods. Among yearly assets, Tsimane' bought mostly clothing, kitchenware, and tools; they rarely bought livestock, materials to improve homes, or luxuries. In the past fortnight they bought food (principally starches); they rarely spent on luxuries or addictive substances. Barter was used to get market foods like pasta; in swaps, Tsimane' supplied rice, plantains, and thatch palm. 3/ Gender. Men were more likely to buy, bought more goods, and spent more. 43% of women did not buy an asset the past year, 9% of men did not. 67% of women did not spend cash during the past fortnight, 40% of men did not. Men bought tools and luxuries, women clothing and kitchenware. In barter, women and men each gave one good but men received 61% more value than women. 4/ Trends. The chances of falling into autarky rose by 1.2 percentage points/year, about the same for women and men. Each year Tsimane' bought more assets, spent more, and were less likely to barter. With increasing consumerism came more deficits and savings. Deficits (consumption>cash earnings) and savings (cash earnings>consumption) rose by 5.3% and 9.1%/year. 5/ Poverty. Daily inflation-adjusted income (cash earnings), expenditures, and barter/person were \$0.58, \$0.23, and \$0.05. Since daily per capita measures of income (\$0.58) and consumption (\$0.29, expenditures + barter) differed, they produce different poverty estimates. In Purchasing Power Parity (PPP) terms, a Tsimane' in 2010 had a daily income of \$1.09 PPP, below the international poverty line of 1.90 PPP; by this metric, 75% of Tsimane' were poor.

Ricardo Godoy

Heller School for Social Policy and Management

Brandeis University

Waltham, MA

USA

Email: rgodoy@brandeis.edu; telephone: 1-781-736-2784

Having probed how Tsimane' earn cash and how much they earn, we are now in a position to trace where cash goes, into the assortment of goods bought, whether to slake hunger and cold, to flaunt success, to strengthen social ties. Cash purchases, entangled with their shadow, income, deserve scrutiny because they uncover what people need and value and much of their worth. In industrial economies, income ends up not only in purchases, but in savings and investments. In such economies, what people buy shows a dram of their worth, of what income is, of what one had to have in order to have, and this happens because people, besides using income to buy, use it to save or invest — by hoarding bonds, treasury bills, real estate. In the sanctum economy of Tsimane', compassed by mere and a vale of unpeopled wanton forests, beyond the keen of foreigners, income does less; it allows people to buy and to do almost nothing else. In those places, bereft of banks and investments, purchases, when marshalled sedulously, tell us the percentage of cash going into life's must-haves, into domesticated animals (a movable form of savings), into iron tools and canoes (outdated forms of investments), into liquor to ease life's drudgery, into frills and neophilia. What people buy in bunkered economies tells us where people disengaged from the market stand in their climb to an unsordid palmy lifestyle, what they value and disdain, what they seek and eschew. The share of purchases from the market and the village, of industrial wares, of crops, and of village handicrafts, shows how sternly the market economy bolts its customer. What people buy is what they are, or want to be. With a caveat. In uncatalogued backwoods economies, unmatriculated villagers rely, as well, on barter to get what they have not. It follows that scrutinizing only what people buy with cash will unveil a slice of how well-off they are, a slice that gets smaller once we stack the sundry goods trickling into the household through a cobweb of swaps reaching beyond the household and village.

As before, the bourne of this chapter is observational. I want to plumb in excruciating minutiae what people buy and what they get through barter. I mine in piquant detail three types of data (Table 8.1). First, I use data on yearly purchases of physical assets, such as shirts, plates, jewelry, chickens, and axes, all items with an indubitable long shelf life. The second dataset covers any expenditure incurred the two weeks before the interviews. It includes cash outlays for services like meals or clinic visits, and for goods with a fleeting lifespan, like sugar, or with a lasting one, like tools. The third corpus has all the goods received through swaps the previous fortnightⁱ.

Insert Table 8.1

Besides description, I have three other aims. First, I want to find out the chances of buying luxuries, and the difference between the expenditures of women and men. In **Chapters 1-2** I tracked the pribbles and prabbles of the dignified genealogy of writers going back to ancient Greco-Roman times who said tawdry luxuries beyond the village moat spurred, among backlands people, an inexorable Gadarene rush to trade with foreigners. But other writers controverted this inviolable idea by saying secluded people in economic quietism hie to the market for pragmatic reasons and stunted purchases, to find the useful, the inexpensive, and the efficient; the metal knives, the sturdy clothing, the rubber boots that brook neglect and abuse, and do better than local cognates. The information at hand helps to weigh in on the quarrel. Second, since wife and husband keep apart cash earnings, and since they might differ in what they treasure, they could naturally differ in how they spend cash. These differences, if present, add to conversations about female empowerment, about household cohesion. Last, I use

expenditures to reappraise Tsimane' monetary poverty. If cash earned equals cash spent because Tsimane' cannot do much with money besides spending it — no savings, no investments, no borrowing or lending, no real estate to speak of — one should be able to judge poverty with earnings or with expenditures and land at the same place. In the previous chapter I came up with an allusively flaccid estimate of the daily cash earned by an adult Tsimane', an amount hovering around \$0.8 to \$2.1 for women or men selling goods, \$4.7 to \$5.8 for men working for wages. I check the old estimates to see if using earnings or expenditures makes a difference when reckoning welfare and, more importantly, what the figures say about income or expenditures for any person in the household, not just for adults earning or spending cash.

Yearly expenditures in durable physical assets

Construction of data. Starting with the yearly survey of 2004 of the longitudinal study of people (2002-2010), we asked those 16 years of age or older to list all cash expenditures in durable physical assets they had made the past year, and — for each asset — we asked them to tell us the value and the quantity of what they got. We did not ask about expenditures in durable physical assets in the randomized-controlled trial of village income inequality (2008-2009), but we did in the randomized-controlled trial of saving boxes (2011-2012) (**Chapter 7**). I use data from the baseline survey of the savings study — information gleaned before giving out the lockboxes — because, for reasons we don't fully grasp, the lockboxes changed what people bought; data on purchases after people got lockboxes, blighted by owning a box, I dropped.

Simple as though the question might seem, asking about the purchase of durable goods made the past year yielded two types of small but coarse blunders, one from respondents, one from surveyors. When asked about purchases of durable goods, people betimes said they had bought goods with a short shelf life (e.g., toothpaste) or paid for a service (e.g., fares). The efflux of this type of steady expenditures we catch more accurately when asking about the patchwork of any expenditure made the past two weeks, as we did in a different part of the survey. The second blunder came from surveyors; they could not identify 0.58% (n=104) of the items respondents had bought. For the analysis of this chapter I delete records with either shortcomingⁱⁱ.

Once screened of coarse blunders, remaining answers take us to bulky cash outlays. Uncovered from memory in the yearly surveys (2004 to 2011), the data in Table 8.2 displays the list of all durable assets people said they had bought the past year. During 2004-2011, Tsimane' said they bought 126 distinct items. By distinct I mean a generic label for an item and its near neighbor. For example, I labelled and counted a blue and a white shirt as one distinct item: a shirt. Though it reflects the total number of distinct items bought, 126 hides dazzling blunders in classification. For instance, when classifying a shirt, surveyors sometimes used a wide label like “clothing from the market” but sometimes they called a shirt a shirt, and sometimes, with insufferable fastidious care, they might have called a shirt a blue shirt, and not a red one. I tame foibles in classification by grouping distinct items into larger categories, as discussed next.

Insert Table 8.2

For the analysis, and to redress persnickety (mis-) classification, I lumped the 126 distinct items into ten buckets that struck me as reasonable, nonoverlapping, and uncontroversial: clothing, school supplies, tools and equipment, home improvements, transport, hygiene,

kitchenware, luxuries, domesticated animals, and other. My judgement, of course, crept into what I put in the buckets. For instance, I tagged flashlight batteries as a luxury, but if people used them to hunt or fish at night I should have called them tools, not a frill concupiscenceⁱⁱⁱ. I put shoes and sewing needles under clothing. Of the 126 distinct items bought, tools and luxuries topped the list, each with 26 goods (21%), followed by kitchenware (n=21; 17%) and apparel (n=14; 11%). There were fewer items in the remaining categories. For instance, Tsimane' bought five types of school supplies (4%) and five types of, mostly small, livestock (4%).

Quality of data. In the survey data we sometimes see unbounded spending — people spending lavishly or buying a towering number of a good. At one time or another, eleven people said they had bought more than 100 bullets, more than 100 pieces of apparel, or more than 100 rolls of barb wire. One's impulse is to drop the records until one realizes the expenditures, though unusual, are sound because buyers could have intended to fence sizable pastureland, gone on a long hunting trip, or wholesale clothing. I include them because I cannot justify dropping them. But one kink I cannot explain. As we shall see, every year, on average, 22% of women and men bought nothing, but in 2011 a mere three people said they abstained from buying anything (Table 8.4B1). I cannot explain the drop except to hazard the guess that the 2011 survey on savings twisted and coiled on savings and expenditures. That year, surveyors, when asking villagers about purchases, might have pressed and pressed and pressed until subjects, annoyed by the surveyor, relented by reporting an expenditure.

Ubiquitous in the data of earlier chapters, rounding errors come back with expenditure data. Of the 15,830 goods purchased, people reported fractional values for a paltry 0.18% of the goods. More commonly, they reported the value of a purchase in whole numbers, with values rounded to multiples of five, as Figure 8.1 shows. Women were less likely to round numbers than men, and, irrespective of survey year, village of residence, or of the respondent's sex, people liked to round when they bought a passel of an item (Table 8.3). Depending on the type of good bought, women were 2.6 to 6.6 percentage points less likely to round than men. Buying ten more units of an item raised the chances of rounding by 0.4 to 0.6 percentage points for most goods, but it lowered the chances of rounding by 11.3 percentage points when buying kitchen accoutrements.

Insert Figure 8.1 and Table 8.3

Results. Table 8.4A shows the yearly sample of adults surveyed ranged from 570 in 2004 to 908 in 2011, averaging, *in toto*, 653 people each year (median = 626; standard deviation [SD] = 109 people). Each year the sample was nigh evenly split between women and men. The number of women surveyed was almost always slightly larger than the number of men surveyed, but the difference never surpassed two to eight percentage points and — averaged over the whole period, 2004-2011 — women and men each accounted for half the sample. Not everybody bought durable goods, or at least not everyone admitted to having refrained from buying. Table 8.4B1 shows 22% of respondents had not bought durable goods the past year. Though it highlights Tsimane' autarky, the coarse figure for the joint sample of women and men belies reality because it flattens differences between the spending habits of the sexes. In Figure 8.2A, which draws on Tables 8.4B2-B3, we see women were less likely to buy than men. Excluding the odd year 2011, 38% to 47% of women, but only 9%-13% of men shunned purchasing a durable asset, whether from frugality, tamed wants, or from a small exchequer I cannot tell. Appraised during all the

years (other than 2011), an average of 43% of women and 9% of men forwent buying a durable asset during a year.

Insert Table 8.4 and Figure 8.2A

Men were more likely to buy and bought more than women. Figure 8.2B and Table 8.4C show men, in a year, purchased 4.56 goods while women purchased 2.90 goods. If we drop the high values from 2011, the median number of goods bought falls to 2.2 for women and to 4.2 for men, still leaving men ahead. Table 8.4D and Figure 8.2C cap the story, showing that, when buying, men, on average, spent 613 *bolivianos* per year, almost four times more than women (166 *bolivianos*)^{iv}.

Insert Figure 8.2C

Arranged by frequency of purchases, clothing (42%), kitchenware (26%), tools (16%), and luxuries (9%), in that order, topped the list (Table 8.5A and Figure 8.3A). The same ranking resurfaces when looking at what women and men bought on their own. Of the articles women bought, 47% included clothing, 36% kitchenware, 8% tools, and 4% were superfluties (Table 8.5B and Figure 8.3B). The same for men. Forty percent, 22%, 20%, and 11% of men's expenditures ended in apparel, kitchenware, tools, and indulgences (Table 8.5B and Figure 8.3B). Women bought more clothing (47%) and kitchenware (36%) than men (clothing = 40%, kitchenware = 22%); men bough more tools (20%) and luxuries (11%) than women (tools = 8%, luxuries = 4%). As telling as what they bought is what they did not buy. Women and men did not invest in livestock, in school supplies, in hygiene, in home improvements, in means of transport. From the analysis we see the market economy might gravel customers with whirring choices, but it confutes the common refrain the market spawns profligate spending in luxuries among cash-famished people. One spots an inkling for frills, but as a dull pentimento of expenditures.

Insert Tables 8.5A-8.5C and Figures 8.3A-8.3C

Table 8.6 shows time trends in the purchase of durable goods, and the propensity of women and men to buy different bundles of goods. During 2004-2011, consumerism rose; the chances of not buying fell by 3.5 percentage points a year. Not only were Tsimane' more likely to buy, they were buying more wares each year (3.1%), principally clothing. With the passing of each year, people were 2.8 percentage points more likely to acquire clothing and, offsetting this trend, they were one percentage point less likely to buy kitchenware. Women and men differed in their buying habitudes. Over all the years of the study, women were 28.8 percentage points more likely to refrain buying than men. Women bought 31% fewer distinct goods and spent 60.5% less than men. Compared with men, women bought 12.3% more units, and were 5.3 and 19 percentage points more likely to buy clothing and kitchenware. Also, women were 9.1 and 11 percentage points less likely to buy luxuries and tools, and 5.1 percentage points more likely to feel buyer's rue.

Insert Table 8.6

Having lost the savviness to make bast and cotton homespun, Tsimane' sally forth to the market to appease unmet needs for clothing, requisite during the cool nights and the random cold snaps of the dry season (**Chapter 5**) and to display the sartorial *savoir faire* of townsfolk. Too churlish to identify with refinement the clothing articles bought, and too crude to allow one to see how clothing articles differ by the buyer's sex, our data nonetheless allows us to see the contours of how Tsimane' bedizen themselves. Of the 1,971 clothing articles bought, shoes, blankets, and pants towered above others, accounting for 13.8%, 11.9%, and 10.3% of purchases. I interpret apparel purchases in two ways. One could say the abjection of ancient protean, distended artisanal skills to the minatory pounding of the market economy pulls Tsimane' away from the unearned beatitude of autarky toward modernity. In drifting to the marketplace to buy apparel, they gain comfort and get closer to owning the status symbols of urbanites. Once in the market's clutch, knowledge and skills to make traditional clothing vanish from desuetude, leaving Tsimane' without a choice but to come back to the market for more clothing. To this interpretation we could add a correlative one. Dexterity and know-how do not vanish with modernization but go into abatement. Once in the market economy, customary knowledge of how to make apparel with handy material goes into a funk. In the second reading, the lure of the elephantine market reflects the availability of inexpensive commercial clothing, which customers could have replaced by fashioning apparel at home had they wished to — but chose not to because the market gave them cheaper, sometimes better replacements. Until they vanish, traditional knowledge and skills to fashion clothing do not vanish. They stay stored in a deep cultural subdirectory.

Summary of yearly expenditures in durable physical assets. Tsimane' are buying more clothing, kitchenware, tools, and luxuries; women slightly more clothing and kitchenware, men more tools and luxuries. Most have stepped into the buying treadmill. Rare for a people abutting cattle ranches, Tsimane' don't buy livestock. Few also buy school supplies, hygienic products, hardware to improve homes, or means of transport. What is it about clothing they find so enticing? Why not livestock? Why not materials to improve homes? Why not something else? Panglossian answers would say livestock are too risky, assailable as they are to predators, illness, and thieves. Not much in the way of home improvements because termites, floods, rain, unending tropical humidity rot, punish, and pulverize wooden houses with their thatched roofs. No need to buy school supplies in villages without schools or permanent teachers.

Clothing differs. Besides its utilitarian role, manufactured clothing brings quick praise to those donning it as they strut about in public places. As a way of conveying patrician success, clothing enjoys a special place, which wares stuck in the confines of the kitchen, barb wires standing in a far-away pen, notebooks and pencils buried in satchels, all lack. Eventually, perhaps, people will graduate to displaying accomplishments through larger detectable investments in tin roofs, bicycles, refrigerators, but during the initial stages of continual engagement with the marketplace, store-bought clothing serves as an efficient, democratic way of parading success, however humble the gesture.

The other noteworthy, albeit unsurprising, finding is the difference in expenditures between women and men. Women were more likely to eschew buying durable goods, purchased fewer goods, and spent less than men. What to make of this? It could show craven consumerism has not gripped women as much as men. Spending less, women might save more^v. We don't know. Nothing wrong with spending less if women squirrel away unspent cash for worthy future endeavors. Besides, differences in spending mean little if wife and husband federate income and

use freely what the other bought. However, differences in spending could convey the obvious point that men, holding more earned cash than women, can spend more. *Sans* savings or spousal sharing, spending differences between wife and husband show they differ in economic might.

Expenditures during the past fortnight

Construction of data. It would be a blunder to speak of cash outlays during the past fortnight as purchases because we asked people to report their expenditures. Not all expenditures ended in purchases. Sometimes we hear people saying they had spent money paying workers, sometimes they told us they had spent money in fares and meals. As concepts, expenditures and purchases overlap, but expenditure describes more accurately what we have.

Before analyzing the data I dropped a few expenditures surveyors could not identify^{vi}. With these troubling cases out of the way, I identified the plenitude of wares and services were money went. The number of distinct expenditures during the past fortnight (n=244) (Table 8.7) was twice as large as the number of distinct durable items bought during the past year (n=126) (Table 8.2), and for a good reason. When asked what they had spent money during the past two weeks, people listed foods, fares, medicines, durable goods like pots and shoes, and any other fleeting event for which they had disbursed money, like paying for a meal in town. In contrast, when asked about the durable physical assets bought during the past year, people had fewer choices on what they could say. Expenditure during the past two weeks covers any cash disbursed to get anything; not so with expenditures in hard assets. If surveyors mistakenly entered information on evanescent expenditures into the dataset on durable assets, I dropped the records for the analysis of the previous section, but if they mentioned buying a bulky durable asset during the past two weeks, I left the record in the analysis of this section. A sensible decision. Over eight yearly surveys (2004-2011), people will report spending on many things during the past two weeks, sometimes in expensive durable goods, sometimes in small items, sometimes in a taxi. I find no reason to drop any item from the magpie collection of expenditures of the past two weeks.

Insert Table 8.7

I grouped the cacophony of expenditures into the following categories: food, addiction, clothing, health and hygiene, transport, tools, housewares, school supplies, luxuries, and animals. The category *other* contains a smorgasbord of expenditures unwelcomed in the previous categories. Some categories I split. For example, with expenditures in provender, I distinguished between expenditures in fats, sweets, meats, starches, spices, dairy, staples, and restaurant meals. I also split expenditures in health and hygiene, transport, and housewares.

Sometimes squeezing a good into a category was a scabrous task. As before, I made arbitrary choices in gray areas. Two examples. Even though it comes from milk, caramel milk (*dulce de leche*) I called a sweet rather than a dairy product. I called sugar a staple instead of a sweet^{vii}. Tallying the number of items in a category for Table 8.7 posed challenges as well. Now and then the numbers in column *N* of Table 8.7 do not match the sum of distinct expenditures in the middle column of the table. This happened when I could not identify an item, as occurred with wild animals, or when I thought readers would not care about how I lumped expenditures. Zoologist aside, few readers will care to know whether someone bought deer meat or monkey meat, or the type of monkey meat bought; combining these expenditures and putting

them under the capacious label of wildlife will do for most of us. I also placed goods in the same bucket when they seemed flawless substitutes; other than a *barista*, most readers will overlook differences in expenditures between instant and ground coffee. Last, I relied on the code number assigned by surveyors to an item to classify the item if the item had no name^{viii}. I would like to think none of these choices deranges the analysis.

Quality of data. I tested for telescoping bias because we asked about expenditures for each of the two weeks before the interview. Tables 8.8-8.10 display the tests' results, and two signs of forward telescoping. [1] Values for the past seven days were higher than values for the past 8-14 days. Respondents were 24.5 percentage points more likely to say they had bought a good during the past seven days than during the past 8-14 days (Table 8.8). Along the same lines, they said they had bought 0.75 more goods (Table 8.9) and spent 5.7% more (Table 8.10) during the past week than two weeks ago. [2] Food expenditures show a recrudescence of forward telescoping bias. Respondents were 5.5 percentage points more likely to say they had bought food the past seven days than the past 8-14 days. Compared with their food expenditures 8-14 days ago, respondents bought 0.66 more food items (Table 8.9) and spent seven percent more the past week (Table 8.10). Other than expenditures in food, expenditures in other category of goods show patchy evidence of forward telescoping bias, probably because other categories had small samples (Tables 8.9-8.10).

Insert Tables 8.8-8.10

Figure 8.4 shows respondents rounded the last digit to multiples of five when reporting expenditure values. In Table 8.11 I show the predictors of the propensity to round answers. One undeniable result appears: higher expenditures predicted a higher likelihood of rounding. An increase in expenditures of 100 *bolivianos* saw the chances of rounding go up from a low range of 3.3 to 4.9 percentage points for expenditures in luxuries, transport, and tools, to a high range of 11 to 23.5 percentage points for expenditures in housewares, health, and food. For all expenditures together, spending 100 more *bolivianos* increased the chances of rounding by 9.5 percentage points. For all expenditures combined and for provender, women were 1.8 to 2.3 percentage points less likely to round than men, and, for these two outcomes, each year saw a 3.6 percentage-point rise in the propensity to round answers.

Insert Figure 8.4 and table 8.11

Results.

Descriptive findings: All expenditures. Table 8.12A shows we surveyed about the same number of women and men each year. In an average year we canvassed 391 women (median = 303; SD = 228) and 403 men (median = 321; SD = 258). The total sample during the eight years of the study (n = 6,348) was well cleaved between the sexes: women 49%, men 51%. Fifty-four percent of people shunned spending cash during the fortnight before the interview (median = 58%; SD = 16%), but the percentage went from a low of 13% in 2011 to a high of 62% in 2006 (Table 8.12B1). Data for 2011 is an anomaly bespeaking several possibilities, such as a surge in true spending that year, a veritable shift in values from a large sample of fresh villages surveyed in 2011, or a different manner of collecting data. If we exclude 2011, the average share of people in a year who forborne from pending reached 58%. As before, women were less likely to

spend than men (Figure 8.5A). Across all the years of the study, 67% of women and 40% of men did not spend cash during the previous fortnight (Table 8.12B2-8.12B3). Women were 26 to 29 percentage points more likely to avoid spending than men, the range reflecting the use of 2011 data. And, as before, when they spent, women acquired fewer items than men. During the fortnight before the yearly surveys of 2004-2011, women spend on 4.45 items, 1.26 fewer items than men (5.70) (Table 8.12C). Suppose a Tsimane' customer had to go to a store for each expenditure. The fortnightly estimates mean women went shopping every three days, men every 2.4^{ix}. For both sexes, the number of expenditures doubled between 2010 and 2011 – from 3.91 to 8.33 for women, from 5.57 to 9.98 for men (Figure 8.5B). If we drop the high values of 2011, we see a woman and a man spent on 3.53 and 4.83 items during the past 14 days. These figures imply a woman spent cash every four days, a man every three. Brief autarky, brief shopping surges, brief purgation from commercial accoutrements. The bottom of Table 8.12 (section D) shows people spending a yearly average of 128.95 *bolivianos* during the past fortnight, women spending half as much as men (79.86 versus 156.54 *bolivianos*). The gender gap in spending varied by year; women's expenditures went from 33% of men's expenditures in 2004 to 62% in 2010 (Figure 8.5C).

Insert Table 8.12 and Figures 8.5A-8.5C

Table 8.13A and Figure 8.6A show food was the item bought most frequently. Fifty-nine percent of outgoes went to buy sundry foods: raw, processed, local, foreign, organic, wild. No other category came close to food in import. The rest of cash went to obtain goods and services, found in three minor groups. Far behind food came expenditures in health, which, at 10%, palled next to food. The second minor group of expenditures had clothing, transport, tools, and luxuries, each accounting for 5% to 6% of expenditures. The smallest of the lesser groups comprised addictive substances, housewares, and an *omnium gatherum* of items — each capturing 2% of expenditures. As we saw when examining yearly expenditures in durable goods, we see again feeble proof of squandering cash in luxuries or addiction, like liquor and cigarettes. Tsimane' like to spend in sublunary things.

Insert Table 8.13A and Figure 8.6A

Tables 8.13B-8.13C and Figures 8.6B-8.6C show women were more likely to spend on food, apparel, and health; men more likely to spend on tools, luxuries, and addiction. Sixty-four, seven, and 12 percent of women's expenditures ended in food, clothing, and health (Table 8.13B). Men were less inclined to spend on these items; 56% of their purchases went to food, 9% to health, and 5% to clothing. Six percent of men's cash outlays were for tools or luxuries, 3% for addictive substances. More temperate than men, women allotted a meager one percent of their expenditures to alcohol or cigarettes and spent six times less in tools (1% versus men's 6%) and half as much in luxuries (3% versus men's 6%). In Figure 8.7 I summarize, compare, and display sex differences in the frequency of expenditures. Differences appear, but, other than food, none are jarring.

Insert Tables 8.13B-8.13C and Figures 8.6B-8.6C and Figure 8.7

Descriptive findings: Food expenditures. Food expenditures being so striking, they need unbundling. Figures 8.8A-8.8B show what the bundles hide, for everyone (Figure 8.8A) and for each sex (Figure 8.8B). Two types of food expenditures led in frequency: starches (24%) and staples (23%). The compost in starches included processed foods like pasta (56.23%), bread (29.67%), wheat flour (13.63), and a smidgen of sun-dried manioc flour (*chivé*; 0.47%) used to drink or cook, rare among Tsimane' but common among neighbors like Mojeños and Movima. Of the 23 items under staples, one item, sugar, accounted for 79.19% of purchases, the rest for one percent or less. When food shopping, Tsimane' go for pasta and sugar, carbohydrates and calories^x.

Figures 8.8A-8.8B

The hunger for calories Tsimane' meet by buying sweets, the next most important food type after starches and staples. More than half (51.19%) of purchases of sweets went to buy sodas, followed by cookies (21.31%), candy (13.95%), and *yupi* (10.94%), a drink mix like Kool-Aid. Much less frequently, Tsimane' bought ice cream (1.58%), chewing gum and popcorn (each at 0.65%), crackers (0.58%), and caramel milk (0.07%). It seems junk food has entered the Tsimane' diet.

The word meats in Table 8.7 is a witting misnomer used as a shorthand for fish and terrestrial critters (and their by-products), but not for dairy, which I let stand alone. Of the 34 kinds of meats purchased, four topped the list in frequency: sun-dried salted meat (*charqui*; 48.59%), canned sardines (20.45%), generic fresh meat (15.76%), and beef (8.16%). Sausages and beef offal in the form of head, tripe, lights, or bones accounted for 3.89% of meat purchases while fresh fish and the rest accounted for 3%.

Under fats, 78.96% of cash outlays went to cooking oil, 21.04 % to lard, and under spices most purchases went to acquire salt (40.51%) and onions (38.92%). Dairy and eggs lay at the bottom, Tsimane' buyers indifferent to it. Across all years there were only 44 purchases of dairy products and eggs.

One mentionable feature of Figure 8.8A is spending in restaurant meals. Tsimane' incur these expenditure only when they go to town as villages lack eateries. Restaurant meals siphoned off 4% of all expenditures (Table 8.13A) and 6% of food expenditures (Table A.8.1). From 2004 until 2007, 3.16% of expenditures went to pay for restaurant meals; by 2008-2011, the percent had doubled to 6.58%. Like the eating of jejune treats, eating out is becoming fashionable.

I take away a few lessons from all this. First, markets furnish Tsimane' with processed carbohydrates (pasta and bread), calories (sodas and sugar), some meat, cooking oil, and salt. None of this is new to anyone who has spent time with Tsimane', the numbers buttressing casual observations. Second, when marketing, Tsimane' do not go for dairy or fresh vegetables. The two findings could be far-off fourriers of weight gain (Rosinger et al., 2013). Third, Tsimane' are eating out more, which means greater engagement with the marketplace and people of a different ilk.

Moving beyond totals, in Figure 8.8B I compare food expenditures by sex. Other than expenditures in restaurants, sweets, and meats, other expenditures did not differ by sex. When they happened, differences between women and men were small. Women were slightly less likely to eat out (women = 5%; men = 6%) and to buy meats (women = 12%; men = 14%), but more likely to buy sweets (women = 16%; men = 14%). One wonders what drives the

differences, small as they are. As caretakers, women might be more apt to buy sweets to appease restless, seething children. Less likely to visit towns, women will have fewer chances of eating out. I guess men are more prone to buy meat because buying meat revamps traditional norms of man the hunter putting meat on the table. But all these differences are too, too modest; one is safer concluding women and men share food preferences and larder.

Time trends and sex differences. Table 8.14 shows expenditures trends for all and expenditure differences by sex. Unlike previous analyses, here I control for fix traits of years and villages.

Insert Table 8.14

Tsimane' are becoming avid spenders. From one year to the next, the likelihood of not spending cash shrunk by 5.5 percentage points (column 1) while the number and the real value of expenditures each rose by 14% (columns 2-3). Columns 4-10 show no conspicuous yearly change in the chances of spending in different rubrics. Yearly expenditures in food, health, transport, tools, and luxuries hardly changed while expenditures in clothing and housewares contracted by the hollow, albeit trustworthy, amounts of 1.2 and 0.4 percentage point each year (columns 5 and 9). Expenditures in housewares could be shrinking because, as seen in the data on yearly expenditures in durable goods (Table 8.6), people were less likely to buy kitchen accoutrements. Trends in clothing expenditures present a puzzle. I do not understand why Tsimane' were less likely to buy clothing during the past two weeks because data on yearly purchases of durable goods showed them buying more apparel each year, 2.8 percentage points per year to be exact (Table 8.6). Analyses of the two corpora should have led to concordant results, but they didn't, making it hard to tell a rapier story of trends in clothing expenditures.

Trends in some expenditures show a blurry pattern, but sex differences in expenditures are incontestable. Women and men differed blatantly in how they spent cash. Compared with men, women were 26.7 percentage points more likely to abstain from spending, bought 41% fewer goods, and spent 80% less in real value. They were 5.8 percentage points more likely to spend on food and four percentage points more likely to spend on clothing or health. As we saw with the earlier, coarser descriptive statistics, here, with better estimates, we again see women spending less than men in some domains. They were six, 4.2, and 1.4 percentage points less likely to spend in tools, luxuries, and fares or means of transport. Possible reasons: tools because men do the heavy lifting, like cutting trees with axes or hunting with firearms, luxuries because women feel less need to show off status with flashy expenditures, and transport because women travel less than men.

Summary of expenditures during the past fortnight. Fifty-eight percent of the sample did not spend cash in the past fortnight. Well split between the sexes, the samples provide a dependable base to compare expenditure between the sexes. Women were less likely to spend, spent on fewer goods, and spent less than men. They spent more on food, clothing, and health; men more on tools, luxuries, and addictive substances. Though present, sex differences in expenditures were modest. When spending, buyers went for food, principally carbohydrates like pasta and bread and not for luxuries, alcohol, or cigarettes. Women and men did not differ in the types of food they bought; they were equally likely to spend on breads, on sweets, on meats, on starches, on other viands. A rise in consumerism is clear. Over time, the chances of buying rose

and so did the number and value of all goods bought. Broken down by different types of goods, trends shows a yearly contraction in the chances of buying clothing and housewares and no change in the probability of buying other types of goods.

Barter during the past fortnight: 2002-2010

Construction of data. Made up of anthropologists, our team took a reverential attitude to barter from the first time we met Tsimane'. Other than kinship, few topics in cultural anthropology seem to lure so many acolytes. Balanced reciprocity, delayed and immediate, is the signature social capital of an unsoiled society "were none intrudes" until the acidulous market ravishes them^{xi}.

To examine swaps, I rely on yearly information starting in 2002, ending in 2010^{xii}. Data for the first two years needed reformatting. Data for 2002-2003 came from a 13-village, five-quarter longitudinal study extending from May 2002 until August 2003 (Chapter 7). In that study, we surveyed adults every quarter about their truck deals for the past fortnight, yielding several measures for a person in a year. To make data for 2002-2003 comparable with data for 2004-2010, I faced to challenges with the early surveys. First, I had to restrict information for a person to one survey per year. Second, I had to be certain that information from the 2002-2003 study had been collected during the six months of the dry season (May-October), the period when the later surveys of 2004-2010 took place. To address the two challenges I pulled out data from June 2002 and June 2003 and appended the information to data from the yearly surveys of 2004-2010. I chose June because those months had some of the largest samples^{xiii}. The decision had a cost. During 2004-2010, surveys took place over six months. By confining the sample to people surveyed in June, the sample size for 2002 (n=336) and 2003 (n=209) was smaller than the yearly sample size of people surveyed during 2004-2010 (median = 651), some of whom we surveyed in June, some in other months of the dry season.

I screened the appended data before analyzing it. First, a ware given out in barter had to meet at least one ware received in exchange. If a record showed a good went out but nothing came in, the record was dropped. The data was not well coded to assess if the good given during the past fortnight solved a debt. Such an exchange would look lopsided – a good went out while nothing came in – but would be in equipoise when seen over time. Nor does the data tell us if the good given out was an advance or a loan. From the data we can't say anything about lagged exchanges, loans, debts, gifts – wares given or received without an immediate repayment. But what we can see with sureness is the two-way flow of commodities from a coincident swap. Unless I could match a good given out to one or more goods pungle up in exchange, I dropped the record. I kept people who did not barter during the past fortnight for they convey information – they lived outside the sphere of exchange – but those who gave but did not receive (or *vice versa*) I exclude because the survey instructions said to record what went out and what came in. Failure to record both was a mistake on someone's part.

Second, I deleted 23 records of swaps for services, like meals or labor help, because a truck payment for a service resembles an expenditure more than barter. Makes for a tighter plot to confine barter to the exchange of goods than to bring in discarnate things. I used one other stricture to strain the data: a respondent had to say what they had bartered one week ago and – again and separately – two weeks ago. If they told us what they had bartered one week but not the other week, they were dropped because the record was unfinished, as it should have contained information for each of the two past weeks. With one exception. In the 2008 baseline

survey of the randomized-controlled trial of income inequality we asked about barter for only the past week. I leave baseline data from the trial because having data for one week does not signal carelessness; the truncated information reflects the design of the survey.

Once screened, data had information on the goods given, the goods received, and an estimate by the respondent of the nominal value in *bolivianos* for each good obtained, all information jotted separately for the week and for the two weeks before the interview.

In Table 8.15 I list the unique goods (*sensu* Tables 8.2 and 8.7) given, received, or both, and – for comparison – I list the goods bought but never bartered or bartered but never bought. I discuss Table 8.15 later when describing the mean number of goods received in barter (Table 8.18C1-8.18C3).

Insert Table 8.15

Quality of data. Data on barter had capital and venial faults. Some of the foibles we saw with expenditure data come back to haunt us with barter data. As before, I faced ambiguities in how to sort a few goods. Should canned corned beef be placed under meats or staples? I say staples. Is tobacco an addictive substance or a medicinal plant? An addiction, I say. Sometimes the name of a good flummoxed me. Is a *balsa* a raft or the tree from which a raft is made? I classified it as a durable asset for transport. In addition, surveyors could not identify 0.2% of the 3,999 goods bartered. Luckily, there was a handful of prickly cases. As we shall see, in truck, Tsimane' put out a few goods – thatch palm, rice, and plantains, mainly – requited with a galaxy of (mainly) industrial goods, chiefly foods. A smattering of misclassifications will not sink the storyline.

Sometimes the name of the label I used for a category failed to summarize well the bouquet of goods inside the category. With durable goods and with recent expenditures, labels signaled truthfully the goods in the category, but this was less so with the way I grouped some goods in barter. In particular, the labels “Home improvements” and “Staples” I used to examine barter obscured the goods inside the labels. Under “Staples” we find mostly rice, sugar, and plantains, and under “Home improvements” all is thatch palm. True, Tsimane' use thatch palm for roofing so the label is accurate in a narrow sense, but thatch palm is one of the main export commodities of Tsimane', taken to lowland cities like San Ignacio and Santa Cruz in Bolivia, and even to Miami, Florida. It would have been clearer, more truthful, to call thatch palm thatch palm and to call “Staples” “Annual crops” – except that we would have lost the ability to compare the analysis of barter with the earlier analysis of expenditures. I later unpack the goods in “Staples” and “Home improvements” to assess the importance of forest and farm crops that I tucked inside the coarse labels.

Done in a cleverer way, the survey on barter should have asked about the value of goods supplied and about how villagers viewed the fairness of what they got in exchange. We never asked about the ethnic or kinship identity of the consort in barter. Most likely, partners in barter were not Tsimane'. Who else would barter for so much thatch palm or rice or plantains except for foreign regraters? The kinship identity of the barter partner would have given us fodder to talk about altruism and inter-generational transfers. We asked about the cash worth of goods received, not about the value of goods given, so we cannot compare the two and comment on deficits and debt bilking. When asking about the value of the good received, we neglected to ask about the amount received, so we cannot compute the implicit price of the good and, derivatively, or at how the volume of one commodity swapped for another mirrored changes in the relative

price of the two. Astringent critics of backcountry markets enjoy censuring rentier town merchants for leveraging resources and information as they swindle rural rubes. The rebuff might have merit. Maybe in barter outsiders milk Tsimane', but there is no reason to think Tsimane' will not or do not milk one another or other swain. We could have addressed all these concerns had we collected smarter data.

As before, one sees in Table 8.16 a tendency to inflate values for the more recent recall period. And, as before, we cannot tell whether this happens from forgetting earlier incidents, from a penchant to move earlier events closer to the present, or from both. Table 8.16A shows respondents were 8.8 and 3.1 percentage points more likely to say they had received any good or clothing in swaps during the past seven days than during the past 8-14 days. They reported receiving 0.15 more goods in general and 0.23 more food items in the recent past than in the distant past (Table 8.16B). Based on the greater barter traffic of the past week, one might have expected barter values for the past seven days to be higher than barter values for the past 8-14 days; Table 8.16C does not bear out the hunch. The difference in value between the past seven days and the past 8-14 days was indistinguishable.

Insert Table 8.16

Figure 8.9 shows that when mentioning values in whole number for goods received in barter, people liked to round the last digit to multiples of five. Table 8.17 shows the likelihood of rounding did not differ between women and men, but it rose during the study, and happened for goods of higher value. From one survey year to the next, the chances of rounding rose by 1.7 to 2.3 percentage points. An increase of 100 *bolivianos* in the value of any good received in barter increased the chances of rounding by 28.3 percentage points. A similar rise in the value of food, clothing, and health products received in swaps augmented the chances of rounding reported values by 29.4, 23.3, and 66.1 percentage points.

Insert Figure 8.9 and Table 8.17

Results.

Descriptive findings: All barter transactions. The yearly sample of people surveyed went from a low of 209 in 2003 to a high of 1973 in 2008, the former because it included people interviewed during one month instead of six months, the common practice in other years, the latter because it merged people surveyed in the longitudinal study of 13 villages with those surveyed in the baseline of the randomized-controlled trial in another 40 villages. Although the year-to-year sample sizes differed, they were flawlessly split between the sexes (Table 8.18A).

Insert Table 8.18

Surprisingly for a people portrayed as a vestigial stronghold of a pre-industrial society, Tsimane' are not big swappers. Section B1 of Table 8.18 shows that between 70% and 80% of respondents in a year did not barter during the two weeks before the interview. During 2004-2010, 41.71% spent money (Table 8.12) while only 20% to 30% bartered the past fortnight. Men were more likely to barter than women, but the difference was small. In an average year, 22% of men (median = 20%) and 17% of women (median = 17%) bartered (Table 8.18B2-8.18B3). If we use barter as a signpost of autarky, we would say that to assuage wants Tsimane' prefer

buying instead of bartering. In a scale stretching from autarkic to market economies, staunch autarkist would neither buy nor swap, bourgeois consumers would only buy, and those like Tsimane' who buy more than they swap would fall in between, toward the market end of the continuum.

The sexes differed not so much in their propensity to swap or in the number of goods they supplied in swaps, but what they got in return. In barter, Tsimane' got more than they gave. In a year, an average adult received 1.9 goods and gave 1.2 goods (Table 8.18C1), but women received fewer goods. The average women received 1.7 goods while giving 1.2 goods (Table 8.18C2), whereas the average man, in a year, received 2.1 goods and gave 1.2 goods (Table 8.18C3). Both gave 1.2 goods, but men fetched, in return, 20% to 25% more goods (men: median 2.17; women: median 1.82). In part because men got more goods than women, they got more in value as well. The value of goods received by men was – depending on how tallies the numbers – 61.5% (mean) to 94.5% (median) higher than the value of goods received by women (Table 8.8D1).

I next examine the gamut of goods received and the handful of goods given. We begin with Table 8.15. On the surface, Table 8.15 resembles Table 8.7 about the goods bought the past fortnight, or Table 8.2 about the durable assets purchased the past year, but it differs from earlier tables. For each good in Table 8.15 I identify if, in barter, it was ever given, received, or both, and if it was ever bought. I indicate if the good was exchanged but never bought, or bought but never exchanged. Table 8.15 allows one to see how far goods are pigeonholed to the spheres of barter or purchase, and how far they travel between the two. Does barter resemble small change to obtain trifles, or is it used to get expensive items as well?

Returning to Table 8.15: Tsimane' received 133 distinct goods during 2002-2010 while giving half as many goods (65). The finding confirms, from a different slant, the point made a couple of paragraphs north of Tsimane' being net receivers in swaps. Second, some goods served as a general currency in barter, offered and received. Examples include cooking oil, lard, crackers, pasta, salt, eggs, sugar, rice, clothing, laundry soap, and the bagatelle under the row "G & R" (Given or Receive) of Table 8.15. One should not make too much of the finding as a good could have been rarely given or received; in Table 8.15 a good appearing once has the same weight as a good appearing many times. Third, most goods were either received or given. Goods received comprised sweets, bread, wheat flour, spices, dairy, addictive substances, and commercial wares, which included clothing, medicines, hygiene, tools, housewares, and luxuries. Goods given included a montage of staples, fruits, wild plants to eat or fashion goods, none of which were ever bought or received in barter. Last, some goods were bought, but never bartered. Tin roofs, kitchen utensils, many types of luxuries, are some examples. We also do not see people bartering for bicycles, shotguns, rifles, chainsaws, and other expensive durable assets bought and listed in Table 8.2. Barter deals are like coins to obtain sundries, odds and ends that can nonetheless save a life, cure, or stanch hunger if they happen at the right time.

Table 8.15 falls short because it does not tally the frequency goods were given or received. To fill the void, I produced Table 8.19 and Figure 8.10A-8.10B. In them, I record the frequency of goods received or given, abridged to totals for 2002-2010. We start with goods received in swaps (Figure 8.10A). Tsimane' received a sweep of goods, like meats (26.6%), staples (18.9%), clothing (9.4%), starches (7.9%), followed by luxuries, fats, sweets, and hygienic products, each accounting for 5% to 6% of transactions. The giving side of the ledger differs (Figure 8.10B). In barter Tsimane' proffered few goods. Everything given in barter fell

under the category of staples (65.1%) and home improvements (29.4%); there was no third place to speak of.

Insert Table 8.19 and Figures 8.10A-8.10B

For reasons adduced earlier, we need to unpack the goods inside the sobriquets “Staple” and “Home improvements” given, and those in “Meats” and “Staple” received. Figure 8.11 shows that among staples given, rice (46.1%) and plantains (37.4%) ruled barter, which makes sense since the two crops undergird Tsimane’ horticulture and cash cropping ([Chapter 7](#)). Enjoying dexterity in the cultivation of the two crops, Tsimane’ naturally sell them and offer them in barter. Among goods given in barter under the category “Home improvements”, thatch palm reigns alone. Of the goods received, nothing came near animal proteins (meats) and staples. Figure 8.12 shows the animal proteins (excluding dairy and eggs) received in barter. The leading animal protein was sun-dried salted meat (*charqui*), accounting for 72.7% of transactions, followed by offal (14.3%) and fresh meat (7.9%). Sugar made up 97.35% of the staples received.

Insert Figures 8.11-8.12

In truck, Tsimane’ gave thatch palm, rice, and plantains in exchange for meats and sugar. What they gave brings no surprise. They supplied thatch palm, a feral non-timber forest crop, plentiful though dwindling in upriver villages, and two farm crops, rice and plantains, they have grown with adroitness for centuries. Urbanites hanker for the three crops and Tsimane’ give it to them. Nothing surprising. I find it harder and need to guess when making sense of what Tsimane’ get in swaps. An easy explanation would say Tsimane’, like other native Amazonians, living in an empty forests, have a deficit of animal proteins, and rely on barter to amend the shortfall. Since colonial times, the lowlands of the department of Beni, with its cattle ranches of gothic proportions, has been the meat platter for Bolivia. It makes sense for Tsimane’ to supply crops while importing meat through barter, a prized good likely produced with less effort by ranchers. Because people too busy harvesting thatch palm or growing crops might not have the time to hunt, they ask their barter partners to give them meat in swaps. Understandable. Sugar’s prominence is a tougher riddle. Sugar gives fast energy and mirth, women even adding it to traditional beverages fermented at home (Zycherman, 2013, p. 226). I can see why Tsimane’ would yen for sugar in barter. What I cannot explain is why sugar and not something else, like pasta. The incantation that causeless social preferences explain the riddle does not get us far, for preferences come from somewhere. I wonder if sugar is a magnet luring the impulsive who want a high now, while foods like pasta, which need cooking and waiting, attract a nearly empty set of patient villagers. Or perhaps what Tsimane’ get is what merchants bring. Of the staples Tsimane’ want, merchants pick those, like sugar, which they find easiest to take to their countryside customers. Supply shapes demand.

Time trends and sex differences in barter. Tables 8.20-8.21 show time trends and sex differences in barter. Table 8.20 shows barter has been shrinking. During 2002-2010, the chances of forgoing barter rose by 1.7 percentage points every year. During these years, the number and value of goods received in barter fell by 3.4% a year while the chances of receiving medicines and other hygienic goods shrunk yearly by 0.8 percentage points. Only foods received in barter gained. The probability of receiving any food in barter rose by 1.9 percentage points a

year, but Table 8.21 shows the increase did not come from receiving meats or sugar, as one might have expected from the abridged analysis just done. Instead, the increase came from receiving all foods combined, which brings us to columns 4-5 of Table 8.21. On the giving side, over time, Tsimane' gave more plantains and less rice. The chances of giving plantains rose each year by 1.8 percentage point while the chances of giving rice shrunk by 1.4 percentage points. Among a shrinking group of villagers who stuck with barter, plantain became the currency of choice.

Insert Tables 8.20-8.21

As seen earlier, and as seen now with better data, the sexes differed indubitably when bartering. Women were 5.5 and 7.7 percentage points more likely to barter or to receive wearable than men (Table 8.20) and 2.7 percentage points more likely to give plantains (Table 8.21). For women, swaps were all about giving plantains in exchange for wearable. Women were more likely to barter, but received 13.7% fewer goods and 40.5% less value when bartering than men (Table 8.20). Men were 4.5 percentage points more likely to give rice, 3.9 percentage points more likely to get meats (Table 8.21). Women and men were equally likely to receive any food (particularly sugar) and hygienic goods, or to supply thatch palm.

Seasonal differences in barter. The yearly averages seen thus far bury seasonal changes in barter. It is possible that in times of fruitfulness – the harvest season of annual crops among Tsimane' – villagers barter more than in the season of dearth, the wet season. To examine seasonal changes in barter, I return to the unabridged quarterly surveys of 2002-2003 and assess the chances of giving rice, thatch palm, and plantains, or of receiving meats or sugar (Table 8.22). I limit the analysis of seasonal changes to 2002-2003 because those were the only years when we asked the same person every three months about swaps in the past fortnight.

Insert Table 8.22

Results are straightforward. Part A shows all adults were 1.1 and 3.6 percentage points more likely to obtain sugar and supply thatch palm in the dry season (May-October) than in the wet season (November-April). If we restrict the analysis to adults who bartered (Part B), we see adults in the dry season were 5.8 percentage points less likely to get meat and 5.2 percentage points more likely to supply thatch palm. Both parts of Table 8.22 show the dry season predicted the chances of supplying thatch palm but did not predict the chances of receiving or supplying other commodities. Swaps did not veer with the seasons.

Summary of barter during the past fortnight. Barter data has some of the recurring mistakes we saw elsewhere, like rounding and telescoping. Its shortcomings, unfortunately, go beyond the technical. The data does not tell us the identity of the barter partner, or the value of goods given and simultaneously received. With barter data we cannot say anything about delayed exchanges, borrowing, lending, deficits, or fairness. The shortcoming is not as damaging as one might first think because Tsimane' are not swappers. During any survey year, about 70% of adults said they had not bartered. When they bartered, people got odds and ends, principally meat and sugar; in exchange, they gave plantains, rice, and thatch palm. Adults did not use barter to obtain expensive durable goods, like rifles or bicycles. Some sex differences

show up. Women and men gave 1.2 goods during a fortnight of a typical year, but men fetched more goods and received more value than women. Women exchanged plantains for clothing, men rice for meat. Barter has been shrinking by 1.7 percentage points every year. Based on observations from 2002 and 2003 when we garnered quarterly information on barter from the same adults, we find that goods given or received did not change appreciably between the seasons.

Barter during the past fortnight: 2000-2001

I have not used barter data from the surveys of 2000 and 2001 because in those years we assembled information for the entire household (2000), or for the two household heads, not for (or from) each adult, as we did in 2002-2010. In 2000 we asked one household head to mentally tally all the swaps for the household during the past fortnight, and in 2001 we asked one household head to summarize what the two spouses had done during the past fortnight. Including 2000-2001 data in the prior analysis would have made it cumbersome to estimate growth rates because barter data in the two periods referred to different entities – households and spouses during 2000-2001, individual adults during 2002-2010.

The early surveys have a trait that makes them valuable. In 2001 we asked not only about the value of goods received in barter, as we did during 2002-2010, but about the value of goods given. Side by side, the two values of 2001 form a fragile gateway to larger topics like exploitation, indebtedness, deficits, all absent until now; fragile because the samples are small. The older surveys help in another way. Bearing in mind how the information was gathered, one can still use it *grosso modo* to see changes in the goods given and received over a long decade, between 2000-2001 (Figures 8.13A-8.13B, 8.14A-8.14B) and 2002-2010 (Figures 8.10A-8.10B).

Changes between 2000-2001 and 2002-2010. A comparison of the goods bartered between 2000-2001 and 2002-2010 shows that, among goods received, the volume of meat transactions changed most, from 10.6% of goods received in 2000-2001 (Figure 8.13A) to 26% in 2002-2010 (Figure 8.10A). Next to each other, Figures 8.12 and 8.14B show changes – some might say improvements – in the type of animal proteins received in barter. The share of sun-dried salted meat stayed fixed at 72% of all animal proteins received, but the share of canned fish and offal declined by 2.2 (from 6.3% to 4.1%) and 8.1 (from 22.4% to 14.3%) percentage points while the share of fresh meat from livestock and wildlife rose from nothing (if one can trust such a finding) to 7.9% and one percent.

Insert Figure 8.13A, Figure 8.14B

The incoming traffic in no other good grew as much as the incoming traffic in meat. The frequency of sweets and staples received grew, but by small amounts. During 2000-2001, 2.9% and 16.7% of goods received in barter were sweets and staples (Figure 8.13A); by 2002-2010, the shares had risen to a modest 5.1% and 18.9% (Figure 8.10A). The percentage of other goods received in swaps did not change, with one exception, a decline. During 2000-2001, 9.3% of goods received were tools (Figure 8.13A); by 2002-2010, the share had dropped to 3.7% (Figure 8.10A). In sum, over the decade Tsimane' got more meat and fewer tools in barter.

On the giving side, Tsimane' supplied fewer goods. Putting Figure 8.11 and Figure 8.14A next to each other, one can see Tsimane' during 2002-2010 were slightly less likely to

offer maize, manioc, and other staples than during 2000-2001, and more likely to supply rice and plantain. The percentage of staples among all goods given in barter rose from 55.8% during 2000-2001 (Figure 8.13B) to 64.1% during 2002-2010 (Figure 8.10B). A comparison of Figure 8.11 with Figure 8.14A shows the swelling importance of staples came from just two crops, rice and plantain, whose shares among goods offered rose by six and 1.4 percentage points, from 40.4% to 46.1% for rice, from 36% to 37.4% for plantain. If one adheres to the belief that what people farm with nonpareil dexterous husbandry most likely communicates their comparative advantage, then one would say Tsimane' are becoming rice and plantain specialists, a conclusion jibing with the findings of **Chapter 7**. The share of goods given in barter in the category of "Home-improvement" fell from 37.3% (Figure 8.13B) to 29.4% (Figure 8.10B). Since everything inside the "Home-improvement" bin was wild thatch palm – 99.8% of goods during 2002-2010, 99.4% during 2000-2001 – the shrinking share of "Home-improvement" comes from less demand for palms, depletion of feral stocks, or both (Fernández-Llamazares et al., 2016).

Insert Figures 8.13B-8.14A

Surplus and deficit in barter. In the bar graphs of Figures 8.15A-8.15B I compare the value of goods received and given in barter the past fortnight for 179 households swapping goods in 2001, the only year for which we have values for the two sides of the deal. The two bar graphs look alike, with their long flat tails to the right and the same type of hump to the left. The median value of goods received (49 *bolivianos*) and given (54 *bolivianos*) were similar in real life, though some might say that a 12% difference in median values during a fortnight is an expressive gap^{xiv}. To me, the graphs show no arresting difference. The worth of goods given counterbalanced the worth of goods received.

Insert Figures 8.15A-8.15B

In Figure 8.16 I split the sample of households bartering into those that lent, borrowed, or did neither. When, in barter, the value of goods given by a household outweighed the value of goods received, I called the household a lending household for it gave more than it got, and, following the same logic, when the value of goods received overbalanced the value of goods given, I called the household a borrowing household. Households breaking even neither borrowed nor lent, meaning the value of outgoing and incoming goods canceled each other.

Insert Figure 8.16

Figure 8.16 shows half the sample of households neither lent nor borrowed, 13.97% borrowed, the rest – a high share of 36.87% – lent. Since we do not know the identity of the trading partners, we cannot provide an unchallengeable interpretation of the finding. If barter happened only between Tsimane' – unlikely since they got many commercial goods in exchanges – one could say swaps stood for a Stone-Age form of credit. Half the sample broke even, while others lent (36.87%) or borrowed (13.97%) from each other. The flaw with saying barter resembles Stone-Age credit in an encapsulated economy is that the percentage of households that lent and borrowed should have been the same; they were not. Measurement errors and delayed exchanges aside, the fact that 36.87% of household lent while 13.97% borrowed hints at the idea that some barter occurred with outsiders. When the value of goods

given in barter by Tsimane' exceeded the value of goods received from outsiders, outsiders could have been cheating Tsimane', or they could have been indebted to them, two different readings, the last overlooked in ethnology.

Assume as the shibboleth goes that outsiders cheat Tsimane', how much did they cheat? Among the 36.87% lending Tsimane' households ($n = 66$), the mean value of the surplus in barter (value of goods supplied minus value of goods received) reached 12.48 *bolivianos* ($SD = 12.15$; median = 8.50), which amounted to 15.38% of the value of all goods given by household in swaps^{xv}. For an outsider bartering with Tsimane', the 12.48 *bolivianos* yanked from Tsimane' could stand for fair gains to cover portage costs and the risks of trucking, or it could stand for unjustified lucre. Hard to say what the 12.48 *bolivianos* means. Depending on how one views the number, one could say exploitation, if it existed, imposed a modest financial burden, blighting the life of a third of Tsimane'. Most Tsimane' laid beyond the reach of traders' chicanery. Recall from **Chapter 1** one cannot make someone prospect for feral goods against their will. They must be accomplices to the pact, and the above figures lend some credence to the exegesis.

Summary. Information gleaned at the household level during 2000-2001 allows us to estimate changes over the long decade of 2000-2010 and address, in a preliminary way, the prevalence of unequal exchange in barter between Tsimane' and their trading partners. A comparison of 2000-2001 and 2002-2010 data shows Tsimane' receiving more and better quality meat but fewer tools. They offered more rice and plantains, less maize, manioc, thatch palm. The 2001 sample of 179 households with information on the value of goods given and received shows half the sample got in value as much as they gave. If we judge fairness by the value of what went out and what came in, half the sample took part in just deals. For 36.87% of households, the value of goods given outweighed the value of goods received. The higher values of out-going goods could be a sign of unprincipled gains by profiteers, or they could point to in-kind advances by Tsimane' to customers who pledged to repay later. Whether unequal exchange is a sign of exploitation or credit we cannot say, but we can say that unbalanced exchanges did not redound to most households.

Income measures: Comparison of cash earnings and consumption, with a note on the importance of barter in consumption

We turn to two aims of the chapter. The first aim is to see how far income overlaps with consumption. By income I mean incoming cash from sales and wage labor, by consumption I mean cash expenditures plus the cash value of goods received in barter. The second aim is to assess the significance of barter in the total value of consumption. The two topics matter for how we measure poverty in cutoff economies.

To backtrack. In a market economy without savings, credit, or investments, cash expenditures should overlap flawlessly with cash income, both equally useful when assessing monetary poverty. If we leave aside cash income and focus on cash expenditures, we see the crack in the logic of relying on monetary expenditures to gauge poverty, for we care about the value of all goods and services, public or private, coming in, not just about the subset of goods and services acquired with money. When people fetch goods by paying cash or by bartering, the total worth of their consumption should include swaps, otherwise estimates of consumption will be too low, of poverty too high. Neglecting barter will warp an outsider's view of well-being

among people in the hinterland. What we do not know – and need to address – is the size of the distortion from bypassing barter. When many people barter and the value of goods received in swaps is large compared with the value of goods purchased, disregarding barter's value will damage consumption estimates, making it seem people are poorer than they are. Yet trouble runs deeper. What if, like Robinson Crusoe, some do not buy or exchange? Then, even a deferential view to barter will leave us with a twisted measure of penury and its mistress, consumption, a mistake as large or as small as the number of people stuck in the islanded corner of the economy.

To address the chapter's two aims I move in small steps. *i)* I first assess the share of people who lived in hard autarky, those who in the past fortnight did not earn or spend cash, or swap. *ii)* Hard autarky being a select group of people at the endpoint of a continuum, it needs to lie next to other groups engaging with the marketplace in different degrees. If few people live in hard autarky, they will not sway measures of monetary poverty. To fill the canvass, to the right of the autarkic group, I put those who only bartered but did not handle cash, and to the right of the latter, I put those who bartered and handled cash, either as buyers, as sellers, as wage earners. In the bar graphs I will soon show, those who only bartered appear in bin B, those who bartered and handled cash in bin C. The bin at the right-most end of the continuum has people who dealt with cash and never bartered; in the graphs I put them in the bin called *Market*. Only among people in bin C should we worry about barter when measuring consumption, for these people used goods and cash to get what they wanted. The size of this group and the size of barter in the value of all they acquire tells us how much we should fret about mistaken poverty estimates from neglecting barter. *iii)* After grouping people by their engagement with the market, I plot the share of people in autarky over time to spot trends for all, for women, for men. *iv)* As a last step, I assess how much we swell estimates of poverty (measured through cash expenditures) by overlooking barter when people buy and swap.

The autarky-(via-barter)-to-market spectrum. Figures 8.17A-8.17C set the stage. In them I use data on expenditures and barter the past fortnight to split the 2004-2010 sample into the four groups discussed in the previous paragraph. The bar graphs for totals, for women, for men show a J-shaped curve. Twenty-seven percent of the total sample was autarkic. To the right were those who used barter without cash; they accounted for 7% of the sample. Then begins the rise. Ascending from the nadir of 7%, were 27% who relied on cash and barter, then another group of 46% who relied on cash *sans* barter (Figure 8.17A, Table 8.23A). Adding the people in bins B and C we arrive at 27% of the total using barter alone or with cash, the shares being 31% for men (Figure 8.17C, Table 8.23C), 23% for women (Figure 8.17B, Table 8.23B). Thus, ignoring barter misrepresents monetary poverty based on cash expenditures for a third of the sample, a worse distortion for men than for women.

Figures 8.17A-8.17C and Table 8.23

The J-shaped curve for totals gives the appearance that, after leaving autarky, all begin a climb to *Market*, but this would be a mistaken interpretation, for the J-shaped curve summarizes what happens to men (Figure 8.17C; Table 8.23C). For men, the share of autarkic people is larger than the share of those who used barter alone (bin B), the latter smaller than the share of men relying on barter and cash (bin C). The percentage of men who used cash exclusively is larger than the share of men in any other groups. Most men handle cash, an unmistakable conclusion. Women differed (Figure 8.17B; Table 8.23B). In most years and in the entire

sample of women, most women were autarkic, untouched by outgoing or incoming cash. One might have extemporize the explanation that the shares would have declined, from the many women denuded of trade, to those who only bartered, to those who jumbled together barter and cash, ending with a handful who dealt with cash only. The figures show no such descent. Instead, women fell into two distinct large groups bracketing the autarky-(via-barter)-to-market spectrum: hard autarkists to the left (40%), exclusively cash handlers to the right (37%) (Table 8.23B). Not much in between.

Trends in autarky (2004-2010). By avoiding cash, people with a tentacle outside the market economy wreak havoc on poverty assessments that rely on cash. Having defined autarky and the number of autarkists, I want to see if the size of the group is labile or fixed because it can tell us if flawed measures of poverty based on expenditures – or almost any other monetary yardstick – will be getting better or worse. Figures 8.17A-8.17C already show crude trends in autarky, which one can see by tracing over time the bin called Autarky or bin B (barter only). Here I want to do something slightly more rigorous than in those figures. I want to estimate the chances an adult woman, an adult man, or any adult would be autarkic during our yearly visits, but I want the estimate to restrain the steadfast traits of a village that could color conclusions. By showing trends in autarky, but inside a village, we sweep aside worries about how indelible features of a village, like seclusion or distance, could affect results.

Figures 8.18A-8.18B display the findings. Figure 8.18A shows that for any adult the chances of being a hard autarkist rose from about 20% in the early years of the study (2004-2005) to close to 30% in the last two years (2009-2010), averaging 1.2 percentage points per year during 2004-2010 (Appendix B)^{xvi}. This should puzzle those who think the relentless market economy vivifies and swallows the backlands; it did not seem to do so during the study period. The upward trend for the total mirrors what happened to men, not to women. In a year, men had about a 10% probability of being hard autarkist; the probability went from just under 10% for the early years of the study to slightly over 10% for the last two years. Men faced a smaller probability of being hard autarkists and the probability rose, albeit slightly by 0.7 percentage points per year, during the seven years of observations (Appendix B). Women differed, and differed big time. In a year, a woman had about a 45% probability of being a hard autarkist, four times higher than the probability facing a man. The probability a woman would be a hard autarkist rose from 40% during the early years of the study to 50% during the last two years of the study, averaging, annually, 1.5 percentage points (Appendix B).

Insert Figures 8.18A-8.18B

I repeat the analysis with a broader definition of autarky that embraced the hard autarkists and those who used only barter (Figure 8.18B). With the more spacious definition of autarky, the chances of being autarkic increased for each sex. For instance, the probability an adult would be autarkic ranged from 20% to 30% in Figure 8.18A, but rose to 30% to 40% with the wider definition (Figure 8.18B). Compared with the yearly trend lines in Figures 8.18A, the trend lines in Figure 8.18B are flatter for women (from 1.5 to 1.1 percentage points per year), steeper for men (from 0.7 to one percentage point per year), but still rising for both sexes.

From this analysis I heedfully conclude that the percentage of people falling beyond the grip of the market economy is nontrivial, at least for women: 40% hard autarkist plus 8% who only swapped brings the total to 48% (Table 8.23B). Forty-eight percent is a big number. And Figures 8.18A-8.18B show an increasing likelihood a person would enter autarky. We need to

think harder about the measure of income in autarky because the problem might not slip away, at least not in our lifetime and for Tsimane'. I take up this point again in the chapter's conclusion.

Before comparing cash income with consumption and assessing the undervaluation of consumption from neglecting barter, I address one concern about the accuracy of the autarky measure. Some might vivisect the measure because it relies on remembering events of the recent past. Our storyline hinges on what happened during the week or the two weeks before the yearly interview. As a check, examine again purchases of durable assets during the past year (Tables 8.4B1-8.4B3). Eight percent of men, 36% of women, and 22% of the total sample said they had not bought a durable ware during the past year. The metrics differ, but they bring us to neighboring numbers. Of the joint sample of women and men, 22% said they did not buy a durable asset during the past year (Table 8.4B1) while, using a different approach, 27% said they had not handled cash during the fortnight before the interview. The two paths bring us to the same neighborhood; 22% and 27% lie not too far from each other.

Income: Comparison of cash earnings and consumption. I next compare income with consumption. Remember what we are about to say leaves out 27% of the total sample — 40% of women, 13% of men who left no footprint of having handled cash or bartered during the past fortnight (Table 8.23A-8.23C). These are big numbers.

Insert Table 8.24

With the caveat out of the way, we turn to Table 8.24. Income and consumption estimates are now more refined than previous estimates because I express them in daily, inflation-adjusted values for an adult. In the longitudinal study we asked adults to report cash income, expenditures, and barter for the two weeks before the interview, while in the baseline of the randomized-controlled trial (2008) we asked them to recall the same events for the past seven days. The longitudinal study produces higher values than the baseline study because it trawls information from a longer recall. I iron-out those differences by computing daily values. To shield myself from outliers and large variation in our small samples, I stress median values in the discussion that follows.

Table 8.24 displays three findings. First, an adult earned a median daily cash income of 7 *bolivianos*, much higher for men (13 *bolivianos*) than for women (3 *bolivianos*). Assuming a foreign currency exchange rate of 7 *bolivianos* per US dollar (\$), an adult earned \$1 a day. Better off than women, an adult men earned a median daily income of \$2, above the \$1 a day gate used to define poverty^{xvii}. Second, the median value of daily consumption for the total sample reached 3 *bolivianos*, slightly higher for men (5 *bolivianos*) than for women (2 *bolivianos*). Third, income measured with cash earnings was twice as high as income measured with consumption. For example, in the total sample, a Tsimane' adult earned a daily mean and median cash income of 18 and 7 *bolivianos*; in contrast, the value of consumption stood at 9 *bolivianos* (mean) and 3 *bolivianos* (median). For women and men, daily cash income was two to three times above the value of daily consumption, buttressing the point that what and how we measure the two matters in judging monetary poverty. Adults were twice as well off when we use income instead of consumption.

The contribution of barter to consumption among people who buy and barter. Measures of barter do not matter for people in autarky and for those who only handle cash. In our accounting scheme, barter contributes everything to consumption among those who only barter (bin B), and is thus uninformative, though important, for this group. Insights about the neglect of

barter in consumption come from people in bin C, those who bought and swapped. For this group, I break down the total value of consumption into barter and purchases and display the contribution of barter to total consumption in Table 8.25. With 811 observations, this group accounted for 19% of the non-autarkic sample ($n = 4,121$; Table 8.24). How we deal with barter is important for those who bought and swapped because these people accounted for a sizable percentage of the population.

Insert Table 8.25

For this group, barter's contribution to total consumption was sound. For the total sample, 37% of the median value of consumption came from barter — 45% for women, 33% for men. The shares were slightly higher when using mean values, but again showed that barter contributed more to the total value of consumption of women (46%) than of men (38%). In sum, ignoring barter when measuring consumption in the group using barter and cash leads to the mistaken conclusion that women were half as well off and that men were a third as well off as they were in truth.

Savings (surplus) and dissaving (deficit)

No, we cannot use cash the value of income and consumption as substitutes because they differ. Consumption fell below income, in part, I believe, from the artifice of measurement. Consumption probably outweighs income because adults brought home crops and animals from their fields and woods, a flow which our accounting system disregarded. Had we undertaken the painstaking chore of reckoning the clutch of commodities trickling into the household day after day, we would have arrived at higher consumption values. And, no, we should not forget barter when measuring consumption in rural societies, a conclusion that will likely survive times' tests because the recipe for garnering data and computing the share of barter in consumption lacked blatant flaws.

Since the value of cash inflow surpassed the value of consumption, however imperfect the measure of consumption, there must be savings (surplus), the last topic before closing the chapter. Savings' importance are well known, and include having a cushion to brace oneself in lean times, or having the means to pay for expensive goods. My aim now is to assess trends and sex differences in the amount of savings.

For the visual analysis, I take the logarithm of expenditures (purchases plus barter) and of cash earnings (sales plus wages). I put expenditures on the y-axis, contemporaneous cash earnings on the x-axis (Figures 8.19A-8.19B). As before, I ignore autarkic people because, frankly, I do not know how to handle them, I do not know how to change the stream of goods pouring into their households into a sensible monetary value without making capricious judgments about the worth of the goods brought in. In Figure 8.19A I include everyone besides autarkists ($n=4,121$), in Figure 8.19B I drop people who only swapped, leaving us with a sample of 3,735 observations of adults handling cash (bin C and *Market*). In each figure I show the totals and the breakdown by sex. Observations near the 45-degree line from the origin show the adults who spent as much as they earned, not much more, not much less. Below the line lie the savers because they spent less than they earned, and above it lie the spenders, those who spent more than they earned, the dissavers, people running a deficit, in hock perhaps.

Insert Figures 8.19A-8.19B

The first thing that strikes one is that samples do not matter; the two scatter plots look alike. The entire sample of 4,121 behaved like the smaller sample of people who managed cash ($n = 3,735$). The second worthy finding is that there are more observations below the 45-degree line than above it; savers outnumbered spenders. Then there are two straight lines: a vertical line at the left for adults without recent cash earnings who nonetheless acquired goods by swapping or by using old cash to buy, and a horizontal line at the bottom for adults with recent cash earnings but no consumption. Since we dropped autarkists, the adults in the horizontal line would include those who earned cash but who fetched and consumed goods from the village environs, without swapping or buying, all done presumably with their own effort, helped by others in the household. In our accounting system they show up as people bereft of consumption. Adults in the vertical line would be those who acquired goods without having earned cash. This could happen if they swapped to get goods, if they bought goods with musty cash earned before the recall period, or if they bought things with adventitious gifts of cash, with unearned cash received from a person, like a loan, or from the government, like a pension. Last, men had a larger surplus than women.

In Table 8.26 I assess trends in savings and dissaving during 2004-2010. For the 964 women and 1,528 men with a surplus, the surplus grew yearly by 9.1% for all, by 12.4% for women, and by 7% for men. Women had 97% smaller surplus than men. Not only were women less likely to have a surplus, they were also less likely to overspend; compared with men, they had a 76.1% lower deficit in the sense of spending more than they earned. The year-to-year growth in deficit was 5%, the same for women, men, and, of course, for the total sample. What we do not know is if once a (dis) saver always a (dis) saver or if people glide in and out of the two states. Figure 8.20 complements the story by showing trends in the probability a woman or a man would save, run a deficit, or live within their means. For both, the chances of savings fell, of running a deficit rose, and of living within their means increased slightly for men but remained flat for women.

Insert Table 8.26 and Figure 8.20

Discussion and conclusion

Depending upon how one estimates yearly growth rates in consumption and income for the 2004-2010 period, one finds real daily income rising between 3.2% and 5.7% a year and real consumption growing by 5% a year^{xviii}. The scatterplots in Figure 8.21 show consumption growing at a slightly higher rate than income, but the rates are too friable, the time span too brief, the sample too small for incontestable conclusions. Some might see more opulence, others more consumerism; some growing deficits, others trading ducklings. I see the last: effort spent to stay in the same place.

Insert Figure 8.21

Methods. The approach for retrieving data on monetary expenditures and on barter was the same as the one used for retrieving data on cash earnings (Chapter 7). We asked villagers to account for expenditures and barter deals happening during the past seven and the past 8-14 days. Not surprisingly, the flaws that turned up with earnings data reappear with expenditure and

barter data. The flaws came from villagers and surveyors and included rounding errors, forward telescoping bias, and puzzling values – like everyone saying they had bought something in 2011. The mistakes have known consequences for analysis but do not unhinge it because ways for handling them exist, ways with costs of their own. If 2011 data distresses us, we can drop the year and live with a smaller sample. What is less forgivable are not grassroots mistakes but researchers' omissions. I am thinking of the identity of the partner in the transaction, whether the employer or trader who hired villagers, sold to them, bought from them, or swapped with them. Possibly, a *boliviano* received as a wage from a monolingual Spanish cattleman whom a Tsimane' scarcely understood comes with a different psychological baggage than a *boliviano* received from a village neighbor for doing the same chore. For the same job, one employer places a different burden upon the worker than the other employer. This much is obvious. What we do know is the equivalence in the minds of Tsimane' of the weight and advantages of economic transactions with different employers, sellers, and buyers. And this matters when assessing the costs of leaving autarky, for how a villager wheedles their way into the market economy and how they feel about the market deals they forge could be what leaves the deepest trace on villagers' welfare.

Autarky revisited. Twenty-two percent of people did not buy a physical asset the year before the interview, 58% did not spend cash during the two weeks before the interview, and 20% did not received goods in barter the fortnight before surveyors arrived. Twenty-seven percent of the total never handled cash or bartered. Having so many people in autarky raises questions.

First, is the percentage accurate, or is it a falsehood from the way we measured income and consumption? Saying that a quarter of adults were autarkic is close to the truth because the purchase of durable assets – shirts, pots, cutlasses, knives – is a notable happening, for the assets play a prominent role in quotidian life. How could a quarter of the sample forget they had bought merchandise requisite for survival? I doubt we are far from the mark saying a quarter of the sample was autarkic. Second, is 25% a big number found in other secluded economies, or is it a quiddity of Tsimane'? I cannot answer the question because I doubt there is comparable information for other societies. Third, if a quarter of the sample lived outside the market (defined as not handling cash), how did they gain access to market goods, or did they live without them? Borrowing and gifts might have filled the gap. During 2002-2010, thirty-two percent of adult in the longitudinal study said they gave a gift during the seven days before the interview and ten percent of men said they borrowed a rifle or shotgun during the past week. Though all Tsimane' might form part of the market economy, some could live in autarky because they secure commercial goods through roundabout paths. One wonders if autarkists are not the ones best off because they can be pick out what to get from the market without joining it. And, lastly, one should ask what makes some Tsimane' avoid dealing with the market directly? We cannot answer the question with this chapter's data. Women were more likely to be autarkic than men, but beyond this we cannot say more, other than to speculate. If villagers can rely on circuitous paths to procure commercial goods, people nested in a wide, thick social network might be better placed to keep their distance from the marketplace.

Goods acquired with cash and barter. Tsimane' bought three types of durable assets: clothing, kitchenware, and tools. Except for kitchenware, these worldly goods help with survival. Tsimane' shunned buying school supplies, hygienic products, hardware to improve homes, and luxuries like radios. Nor did they buy livestock, which surprised me because they know animal husbandry from having lived next to cattle ranchers and townspeople for centuries. I could see why they would not buy cattle, an expensive investment, but I cannot fathom why they did not

buy ducks or swine, or even poultry. Perhaps they do not need animal proteins from their pen if they get meats through swaps or unprincipled means like theft. Until banks arrive, livestock could function as savings, sold or eaten when in distress. If this be so, thin investments in livestock would say Tsimane', in lean times, rely on the good will of others or suffer alone. It could also highlight the point made a century ago by Nordenskiöld (Chapter 3) that Tsimane' live in the present.

Of purchases during the past fortnight, 59% went to food, principally starches like wheat flour, bread, and pasta, and to staples, principally white refined sugar. In frequency, health expenditures came in a distant second place, at 10%. The remaining expenditures went to an assortment of necessities like clothing, transport, and tools. Luxuries, cigarettes, and alcohol accounted for fewer than five percent of purchases. Thus, using a shorter recall period, we find support for the earlier conclusion that Tsimane' spend in essentials. Nevertheless, expenditures during the past two weeks show faint signs of thirsting for seemingly dispensable goods, notably sweets, liquor, cassette tapes, cosmetics. What to make of this? A simple answer would say Tsimane' see townspeople use these goods and mimic their consumption to show they, too, are modern. But is it modernity Tsimane' want to advertise, or material success, or both? Or neither? These causeless choices flummox me.

Whereas Tsimane' use cash to get many commercial goods, they use barter to acquire a handful of foods. Tsimane' do not use cash to obtain wooden planks for walls, thatch palm for roofs, wildlife for meals. On their own they get all these from the village commons. Barter they use to get market foods, such as wheat flour, bread, pasta, white refined sugar, cooking oil, and sun-dried salted meat. They also buy these foods, of course, but barter seems exclusively reserved to fetch this narrow range of light foods. And just as they use barter to bring in a few types of foods, they use it to supply just a few goods. In barter they do not give logs, wildlife, manioc, fruits, or any of the other crops they extract from the forest or harvest from their fields. They restrict what they offer in barter to three goods: thatch palm, rice, and plantains.

Reliance on cash or on barter to obtain goods again raises the question of what lies behind the choice of using cash or barter. The costs of taking goods to town provides one clue. Thatch palm, rice, and plantains are bulky, heavy commodities. A villager wishing to sell these goods in town would have to pay for transport costs. They would find it easier to dispose of the inventory by swapping it for goods merchants bring to villages. But easier only if merchants bring goods villagers want. And here is where understanding breaks down because we did not ask merchants why they used in-kind payments, nor did we ask villagers why they preferred receiving goods instead of cash in some deals. Merchants must sense Tsimane' want particular market foods and some items like clothing, and these goods merchants bring to swap. The goods must be light, for merchants must bring them to far-off places. At some level, traders understand Tsimane' penchant for liquor, and liquor naturally they bring, but liquor amounted to a trifling 0.88% of the items given to Tsimane' in barter (Table 8.19). For now we can put to rest the grievance against unprincipled merchants cajoling villagers to drink against their will. It happens, but rarely.

Tsimane' preference for barter over cash would be about convenience and style, like our preference to buy with a credit card instead of cash. Tsimane' want many goods from towns; of these, travelling merchants bring a handful of light-weight goods. Barter is probably more meaningful than our faulty data shows. The information presented about swaps picks up the two-way flow of a contemporaneous exchange of commodities, tit for tat. Not there, but in

delayed exchanges is where barter turns important. In times of need delayed exchanges can become a bridge to better days; at other times they become a kind gesture hardening social ties.

Sex differences. Men engaged with the market more than women. They were more likely to buy, bought more goods, and spent more. Forty-three percent of women did not buy a durable good during the past year, 9% of men did not. Sixty-seven percent of women did not spend cash during the past fortnight, 40% of men did not. The average man bought 4.5 goods during the past year and 5.7 goods during the past two weeks, the average woman 2.9 and 4.4 goods. During the past year and the past two weeks, a man spent 613 and 156 *bolivianos*; a woman, for the same periods, spent 166 and 79 *bolivianos*. Men bought tools and luxuries, women clothing and kitchenware; for other expenditures few differences appeared. In barter also few sex differences appeared; women and men each supplied one good in swaps and got about the same number of goods (women 1.7, men 2.1). However, in barter, the value of goods received by men was 61% higher than the value of goods received by women.

Why the differences and do they matter? When they appear, differences seem large, as in the value of transactions. Men spent much more than women and gained more in truck. In the previous chapter I invoked fluency in spoken Spanish and physical strength as reasons men joined the work force. Those reasons cannot explain expenditure differences between the sexes. Unless there is verbal jostling over the price, quantity, and quality of the merchandise, language fluency and physical strength should play a small role in acquiring goods. Recall from [Chapter 2](#), the archaic, maybe apocryphal, economic transaction dubbed silent trade going back to Herodotus. One does not need language or strength to buy; crude signing will do. More than language, differences in expenditures and trucking reflect travelling frequency. Perhaps because they are more fluent in Spanish, men travel to town oftener than women and in town they buy more and spend more^{xix}. What I do not know is why men don't buy more of everything, why they buy only more tools and luxuries. With private ownership, which Tsimane' have, differences in asset acquisition between spouses would contribute to asset inequality in the household. If wife and husband use what the other acquired, spousal differences in expenditures and barter along with spousal disparities in asset ownership, would mean little for a couple's daily living.

Trends. Regardless of how one defines autarky, one finds that the probability of falling into autarky rose by 1.2 percentage points each year, about the same for women (1 percentage point) and for men (0.7 to 1 percentage point)(Appendix B). Living in economic seclusion, autarkists could have obtained commercial goods through gifts, loans, or swaps happening more than two weeks before surveyors arrived.

Once out of autarky and in the market, Tsimane' acquired more durable goods during the past year and spent more during the past two weeks. The chances of not buying a durable assets during the past year declined by 3.5 percentage points/year; from one year to the next, adults bought 3.1% more wares and were 2.8 percentage points more likely to buy apparel. Data on all expenditures during the past 14 days buttresses the finding of growing consumerism, showing, again, that the chances of not spending during the past fortnight declined every year, by 5.5 percentage points per year. The number and real value of expenditures during the past two weeks rose by 14%/year, but the probability of spending on wearable or housewares declined. The finding that clothing expenditures rose in one dataset while it fell in another dataset is an unsolved riddle alluded to earlier. The timing of clothing expenditures could answer the riddle. Suppose Tsimane' grew increasingly fond of buying apparel in town fairs during the rainy season. These expenditures we would pick up in the first dataset of yearly expenditures, but not in the

second dataset restricted to fortnightly expenditures during the dry season. Trends in clothing expenditures during the recent past would fall if Tsimane' grew fond of buying apparel during a season when we did not survey them.

Trends in barter complement the finding of growing consumerism. More and more Tsimane' chose buying instead of bartering. The frequency of barter contracted by 1.7 percentage points each year. The number and value of goods received in swaps fell by 3.4%/year. Not all barter shrunk, though. Each year, Tsimane' were 1.8 percentage points more likely to offer plantains and 1.4 percentage points less likely to offer rice. Plantains morphed into the best currency for barter.

With increasing consumerism came two other trends: More deficits, more savings. Deficits, defined as the value of consumption outweighing cash earnings, rose by an average of 5.3%/year for all, with about the same growth rate for women (5.0%) and men (5.7%). Savings or surplus, defined as cash earnings outweighing consumption, rose each year by 9.1% for all, at a higher rate for women (12.4%) than for men (7.0%). These results raise two questions.

First, why would Tsimane' save? In [Chapter 7 \(Table 7.2\)](#) we found Tsimane' said they wanted to save to buy clothing, means of transport, tools, medicines and hygienic products, kitchenware, and food, in that order. These were their wishes ranked by importance. Turns out, actual expenditures aligned with their wishes. Besides expenditures in means of transport, most other expenditures went to buy their wish list for savings. The goods in the wish list were the goods bought oftenest. Clothing, kitchenware, and tools ranked highest in purchase frequency the past year (Table 8.5A; Figure 8.3A). Food, medicines, and hygienic products ranked highest in expenditure frequency the past fortnight (Table 8.13A; Figure 8.6A). As a reason for savings, the purchase of luxuries, livestock, and home improvements ranked lowest, and some goods, like school supplies, Tsimane' never mentioned. Again, ideals and behavior agreed; the goods rarely mentioned as a reason for savings were the goods they bought infrequently. Thus, what they thought is what they did. Their reasons for savings and their expenditures chimed well.

Second, why did some save and others have deficits? The question requires examining debt's burden, the ease of buying expensive items, the ease of weathering lean spells, and much more. Public-minded, gregarious villagers with a social mat can do without savings to cope with hard times or to buy expensive goods because they can ask for help or borrow. Why buy if you can borrow? Why save to own a house if you can invite villagers to help you build one in exchange for food, drinks, and merriment? Social ties could explain why some do not save and have a deficit. Lenders forgive unrepaid transfers they gave to neighbors because today's lenders were yesterday's borrowers and will be tomorrow's defaulters. Nevertheless, enterprising villagers who break away from the pack would need cash to handle misfortunes for they would have lost the cushion offered by villagers. Sensible as the arguments might sound, they are wanting because they do not explain why Tsimane' differ in how they choose to safeguard themselves. One is left with the nagging thought that debt and surplus, deficits and savings, are fleeting categories through which villagers glide in and out, benign categories bringing no lasting pain or gain.

Monetary poverty. Had we tallied continuously during a year all goods retrieved from farmlands and forests to sell, consume, barter, or give away, we would have owned a proper measure of Tsimane' consumption. We did not. Instead, we documented the cash income, the cash expenditures, and the monetary value of goods fetched in barter by adults over the past fortnight. After making assumptions about median household size and composition, Bolivia's Consumer Price Index, and Bolivia's exchange rate we arrived at an amount of monetary income

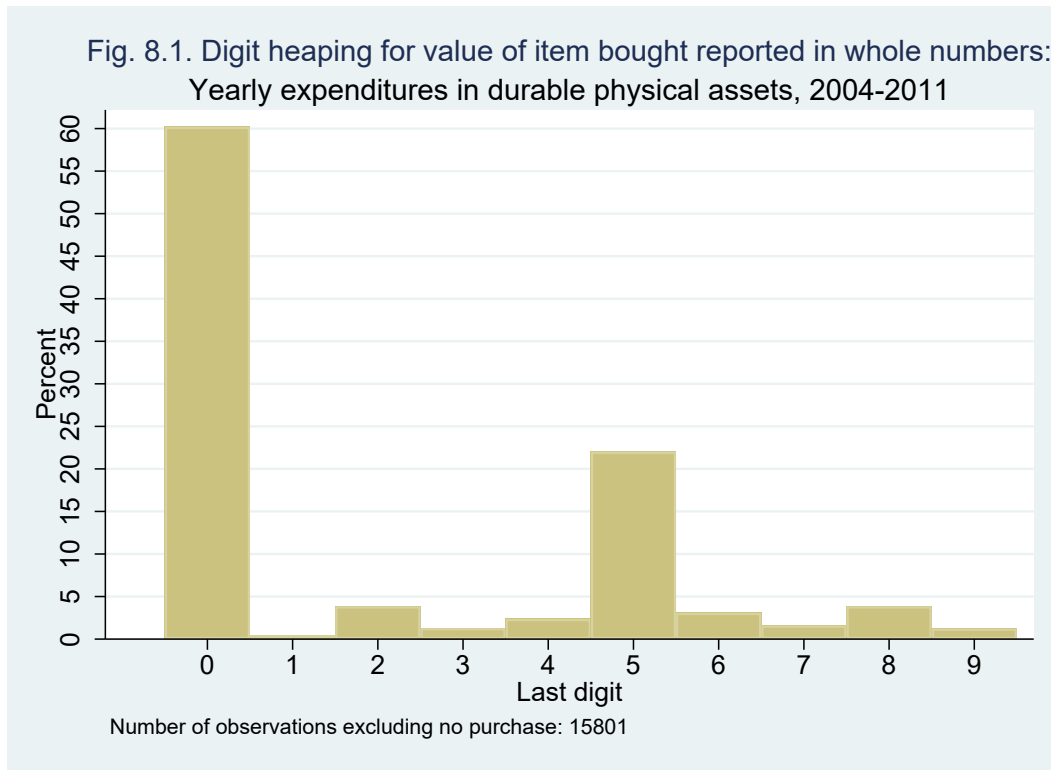
and consumption for any person, adult or child. Table 8.27 details the step-by-step I took to compute measures of income and consumption per person.

Insert Table 8.27

A Tsimane' adult or child had at their disposal a daily cash income of \$ 0.58. Each day they spent \$0.23 and received \$0.05 worth of goods in barter (section E). Consumption, defined as expenditures plus barter (\$0.29), amounted to half of daily income (\$ 0.58). In Purchasing Power Parity (PPP) terms, a Tsimane' enjoyed a daily income of \$1.09. The World Bank, in notes referenced in Table 8.27, defines extreme poverty as daily income below 1.90 PPP per person. With this metric, Tsimane' would qualify as ultra-poor. The income of Tsimane' (PPP 1.09) was twice as high as their consumption (PPP 0.55), showing the two cannot substitute for each other when measuring poverty, though either path takes us into the world of penury. Even if we assumed income and consumption moved in parallel, having nothing to do with each other, and added the two, we would find Tsimane' were still poor, with a PPP of 1.64. To find out the share of Tsimane' falling below the poverty line I used the last (2010) survey of the longitudinal study and most of the same assumptions of Table 8.27^{xx}. Using 1.90 PPP as a cut-off to define poverty, I find that 75% of Tsimane' were income poor, 96% consumption poor.

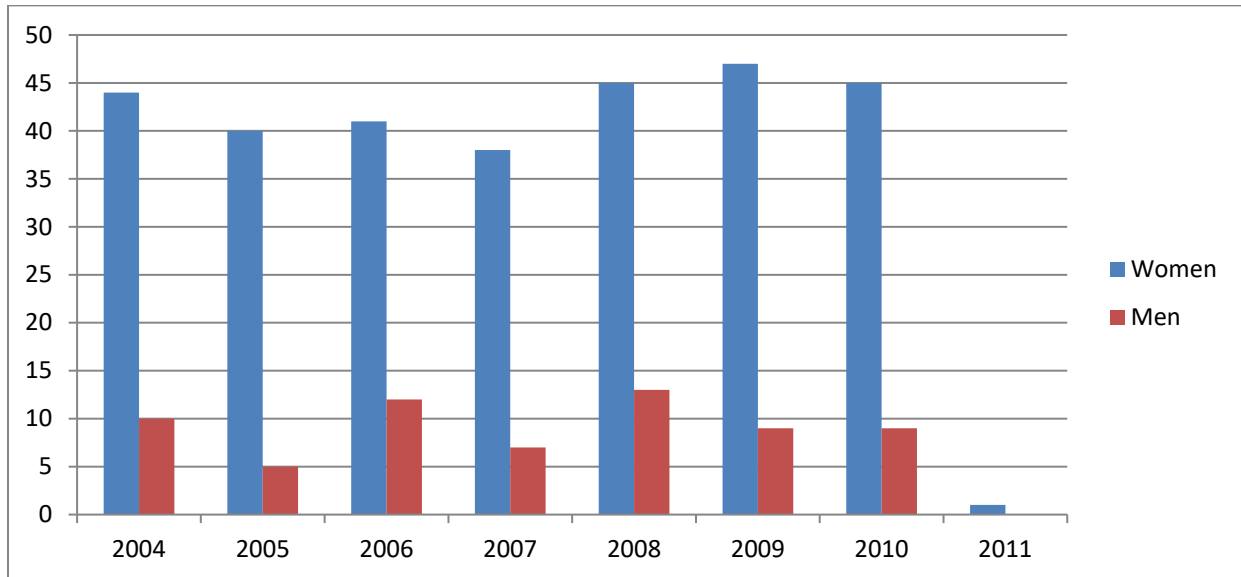
The figures are striking and intriguing: striking because they show Tsimane' have low income by international standards, certainly below the \$1.9 PPP/day benchmark used to define poverty in cross-country comparisons. Intriguing because with so much indigence one would expect massive exodus from the Tsimane' homeland in the department of Beni. Some outmigration has happened, but not on the scale one would expect. Bolivian censuses indicate that from 1994 until 2012, the share of Tsimane' living outside their homeland rose from 1% to 10%. Should they happen, greater interaction with outsiders and increasing Spanish fluency will accelerate outmigration.

From ancient Greco-Roman times to the present, observers have tried to explain why autarkic people would join the market economy ([Chapter 2](#)). The question has aroused interest because, some say, life in or near autarky represents the “original affluent society” of humankind (Sahlins, 1972), a society of Rousseauian Noble Savages enjoying healthy foods, a fair life expectancy, and strong ties (Mendham, 2011). Over the centuries, complementary explanations have arisen to answer the puzzle. Explanations have invoked impulsivity, pining for luxuries, and encroachment by foreigners. These, we think, have pulled and pushed Noble Savages into the market galaxy. An antipodal explanation comes from Hobbesian critics of the prelapsarian state who note in that state life was “nasty, brutish, and short”. Not literally but in spirit, our findings chime with Hobbes. Autarky seems to come with indigence and could be blighted by riches.



Source: do file, [anDurable_yearly_analysis_Part_a_data_quality_v4](#)

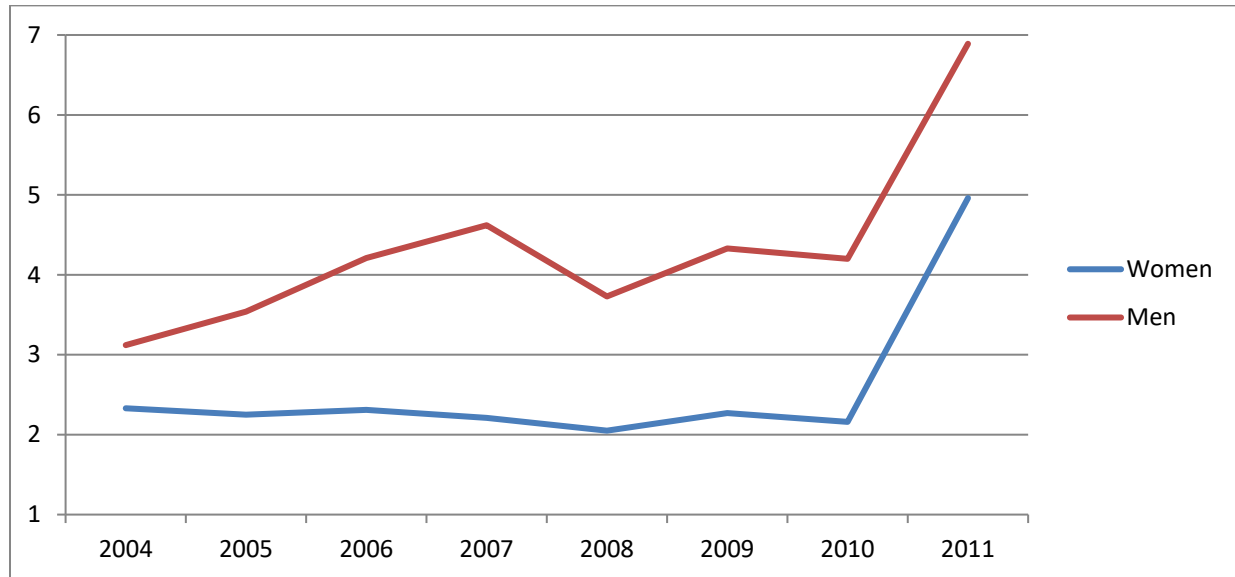
Fig. 8.2A. Percentage of women and men age ≥ 16 years who reported not buying durable assets the past year: 2004-2011



Source: Table 8.4B2-8.4B3

[Excel file Figures_8.2A_8.2D_stats_Table_8.4](#)

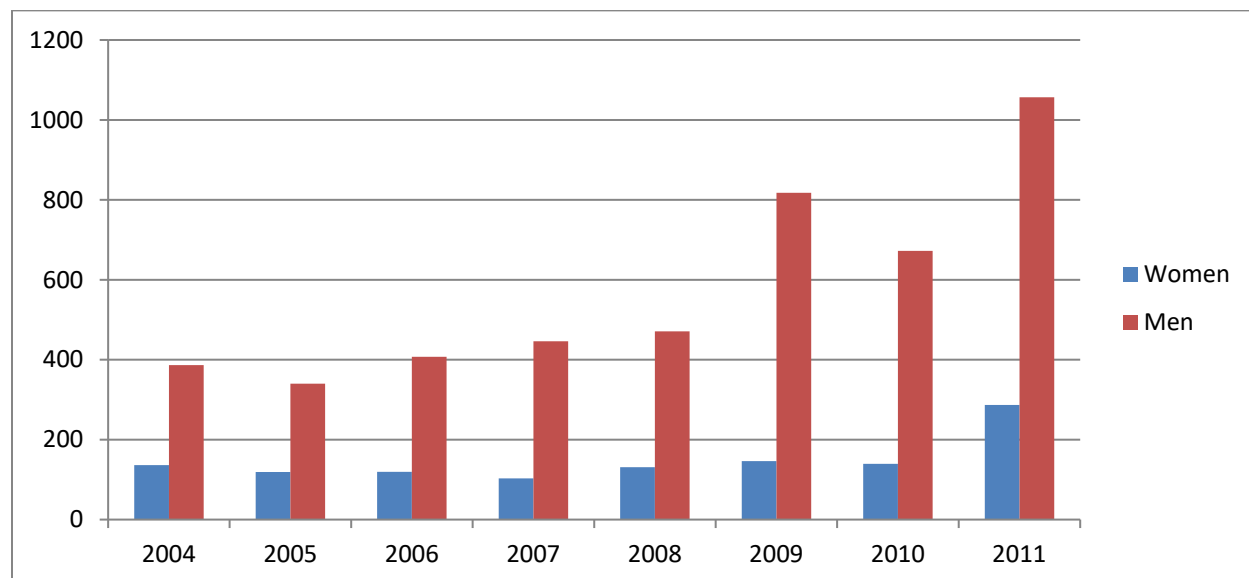
Fig. 8.2B. Average number of durable assets bought each year by women and men age ≥ 16 years who made a purchase, 2004-2011



Source: Table 8.4C

[Excel file Figures_8.2A_8.2D_stats_Table_8.4](#)

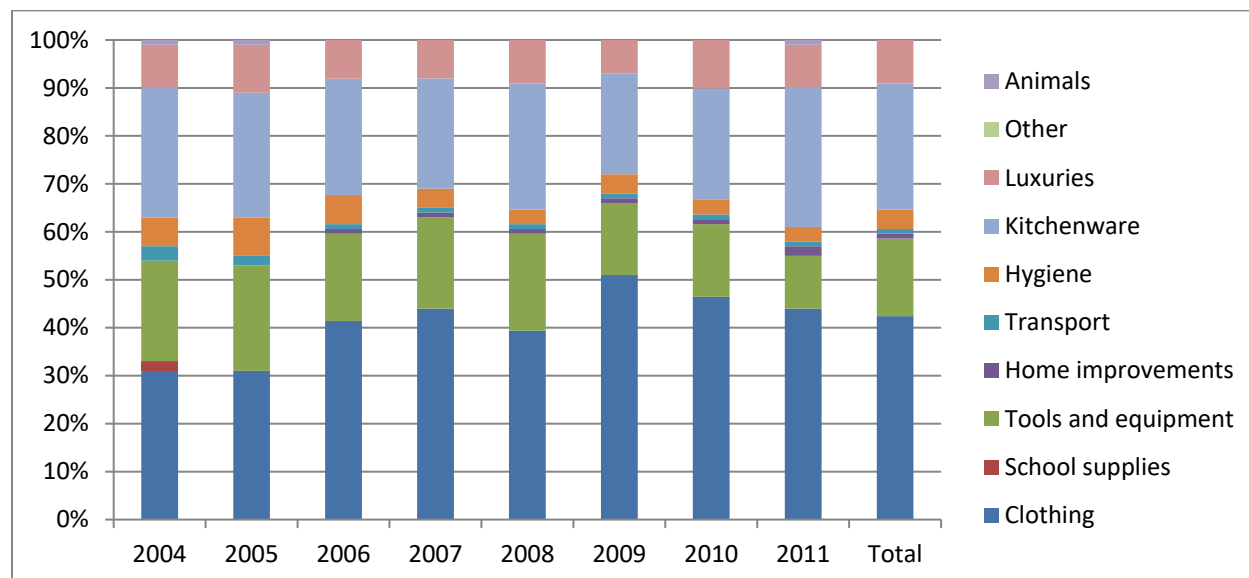
Fig. 8.2C. Average yearly nominal value in *bolivianos* of purchase when women or men age ≥ 16 years bought a durable asset, 2004-2011



Source: Table 8.4D

[Excel file Figures_8.2A_8.2D_stats_Table_8.4](#)

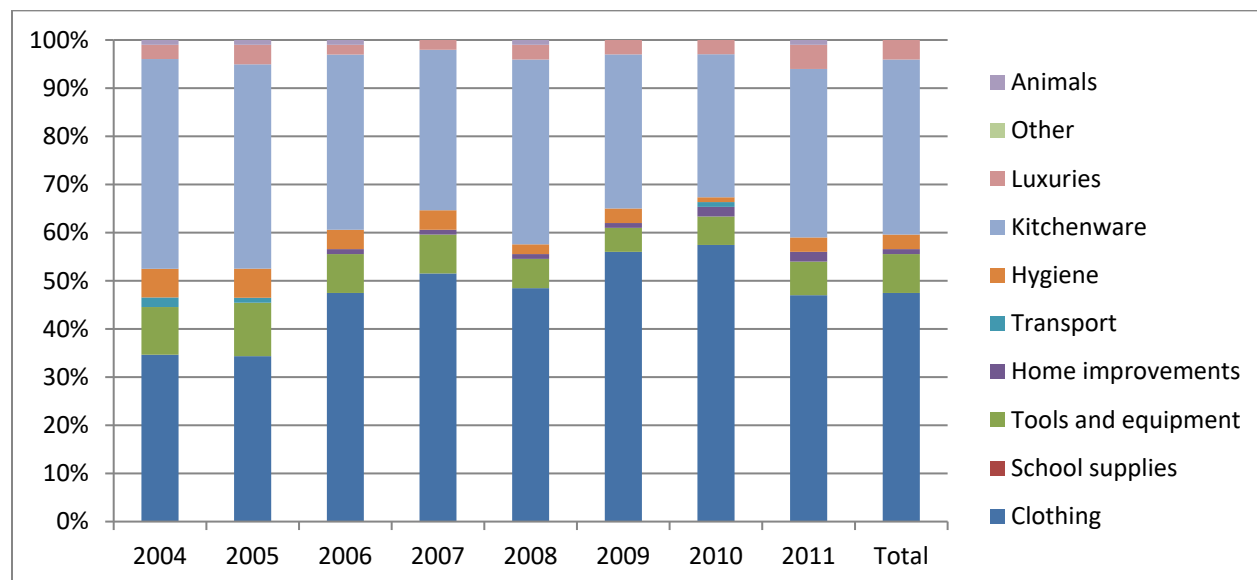
Figure 8.3A. Share of number of durable assets bought each year by women and men age ≥16 years: Averages based on yearly surveys 2004-2011



Source: Table 8.5A

Excel file [Figures_8_3_based_on_table_8_5_total_edited](#)

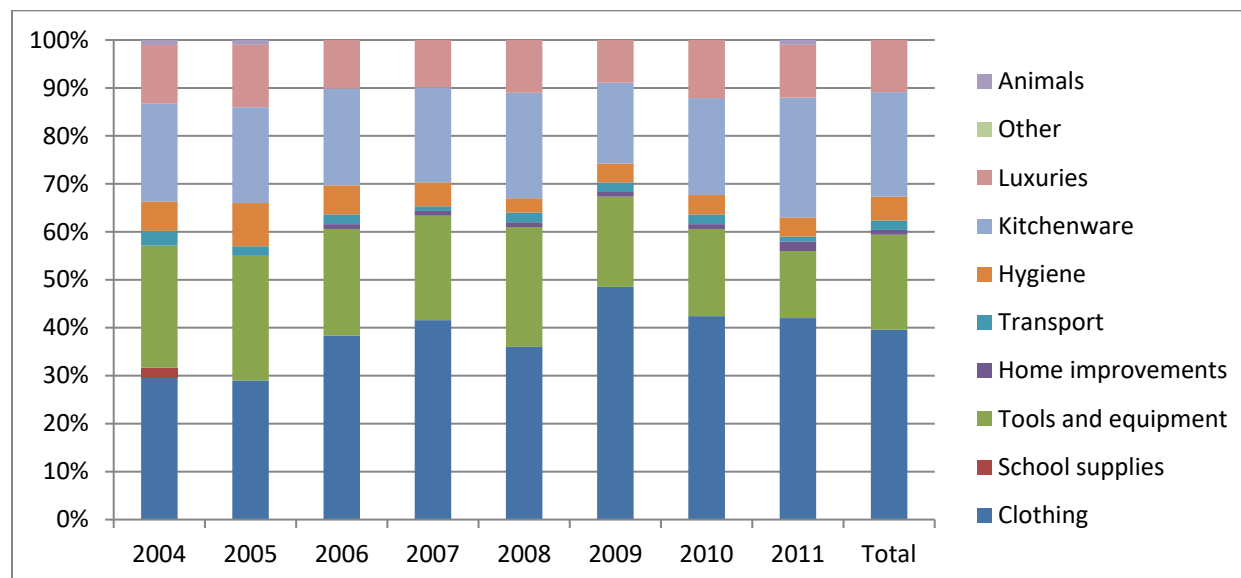
Figure 8.3B. Share of number of durable assets bought each year by women age \geq 16 years:
Averages based on yearly surveys 2004-2011



Source: Table 8.5B

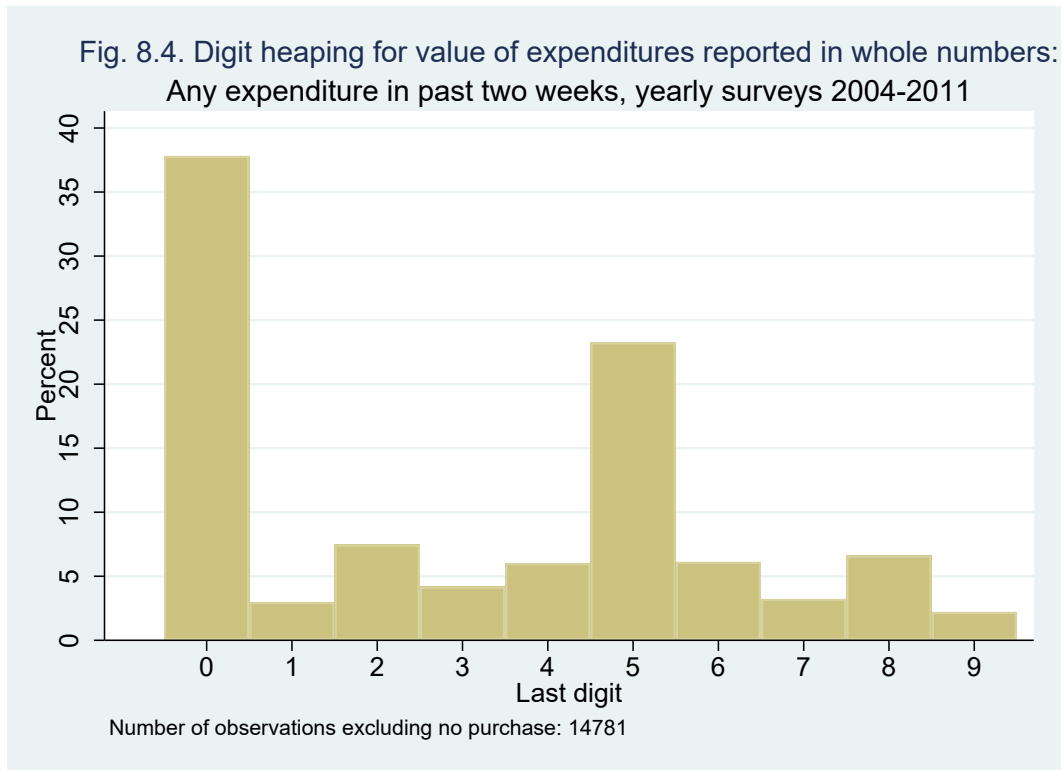
[Excel file Figures_8_3_based_on_table_8_5_total_edited](#)

Figure 8.3C. Share of number of durable assets bought each year by men age ≥ 16 years:
Averages based on yearly surveys 2004-2011



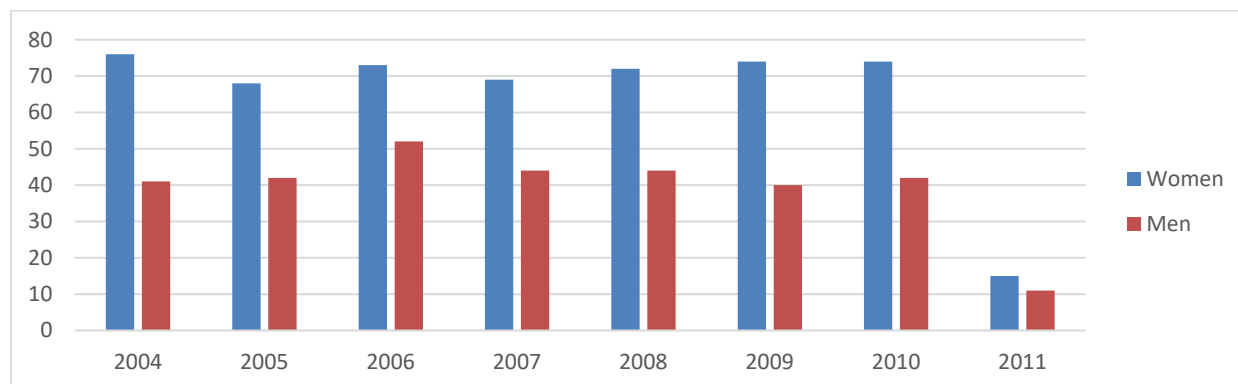
Source: Table 8.5C

[Excel file Figures_8_3_based_on_table_8_5_total_edited](#)



Source: do file, [anBuy_2_weeks_analysis_Part_a_data_quality_v2](#)

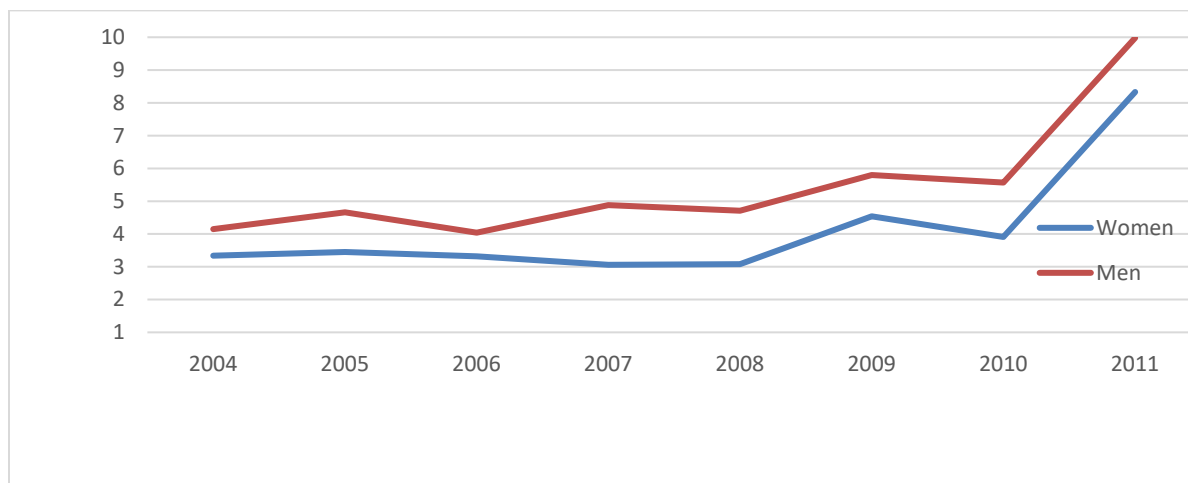
Fig. 8.5A. Percentage of women and men age ≥ 16 years who reported not spending the past fortnight, 2004-2011



Source: Table 8.12B2-8.12B3

[Excel file table_8_12_Edited](#)

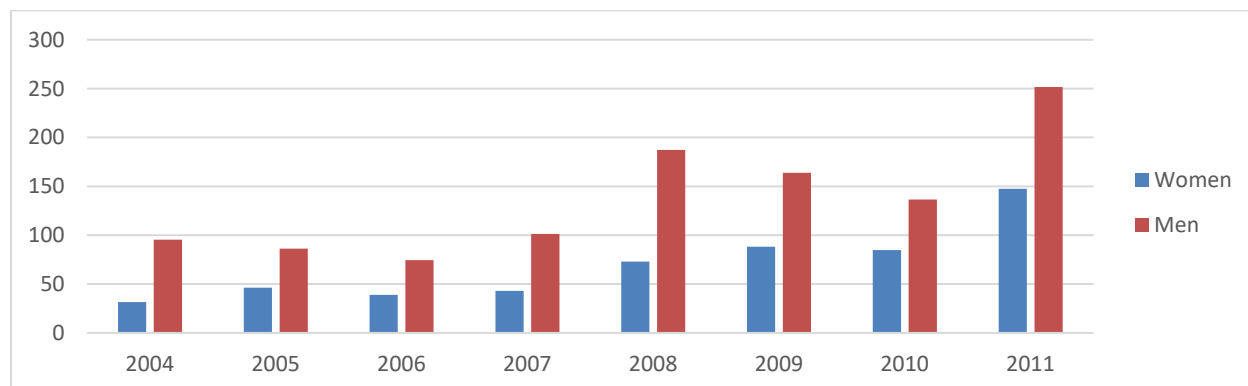
Fig. 8.5B. Average number of expenditures the past fortnight by women and men age ≥ 16 years who spent cash, 2004-2011



Source: Table 8.12C

[Excel file table_8_12_Edited](#)

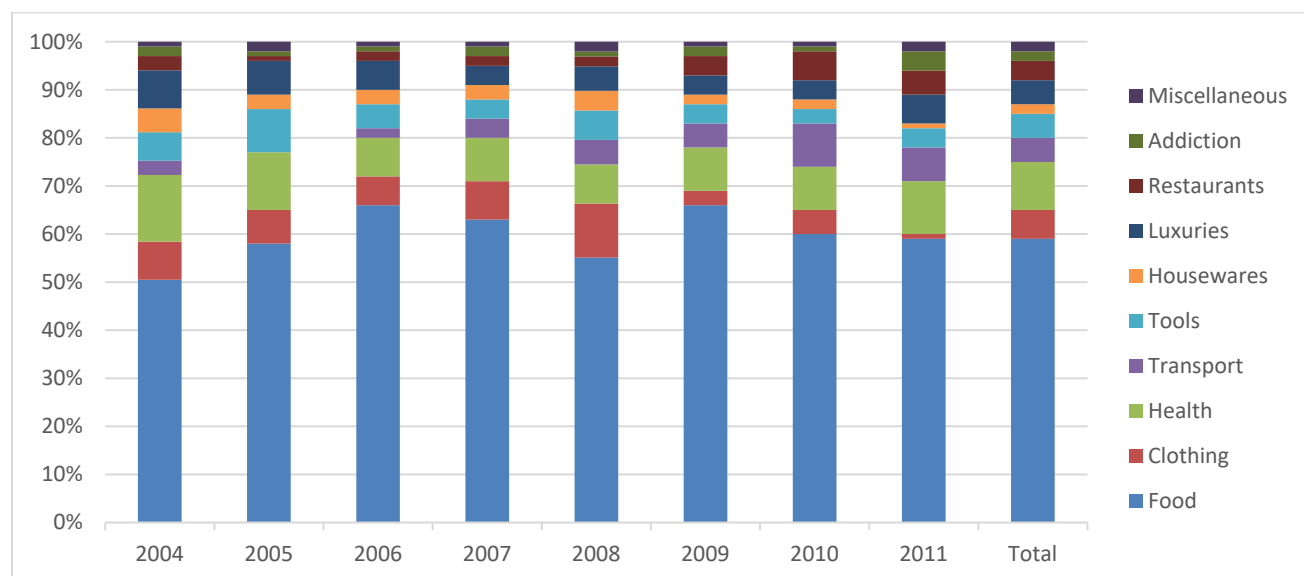
Fig. 8.5C. Average yearly nominal value in *bolivianos* of expenditures for past fortnight when women or men age ≥ 16 years spent cash, 2004-2011



Source: Table 8.12D

[Excel file table_8_12_Edited](#)

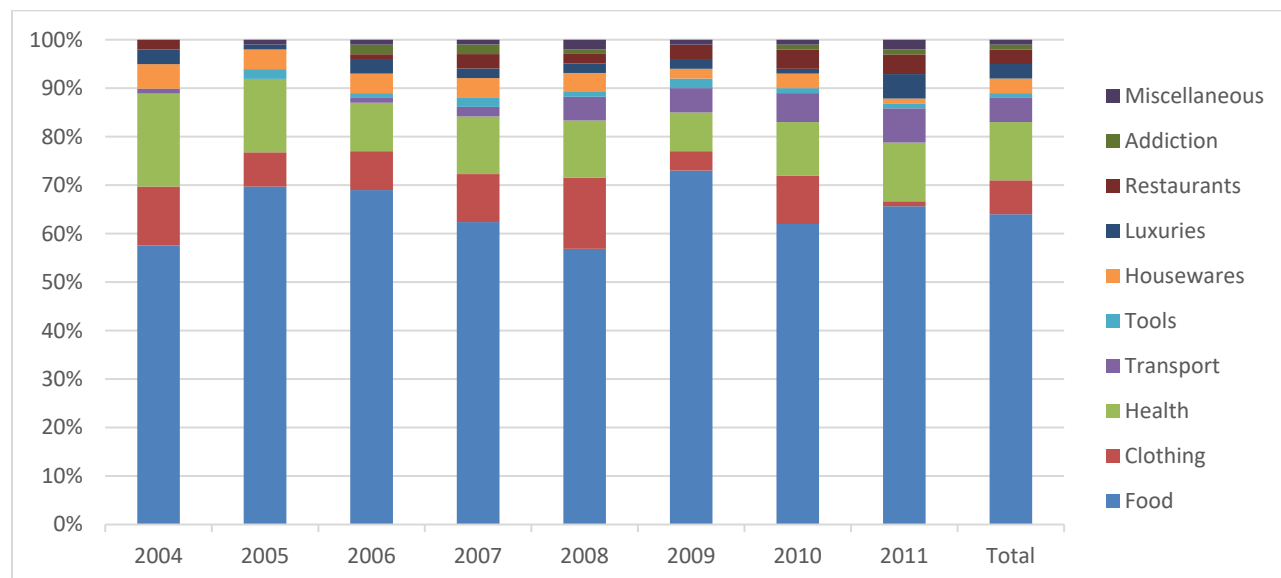
Fig. 8.6A. Share of number of expenditures the past fortnight by women and men age \geq 16 years:
Averages based on yearly surveys 2004-2011



Source: Table 8.13A

[Excel file table_8_13_total_Edited](#)

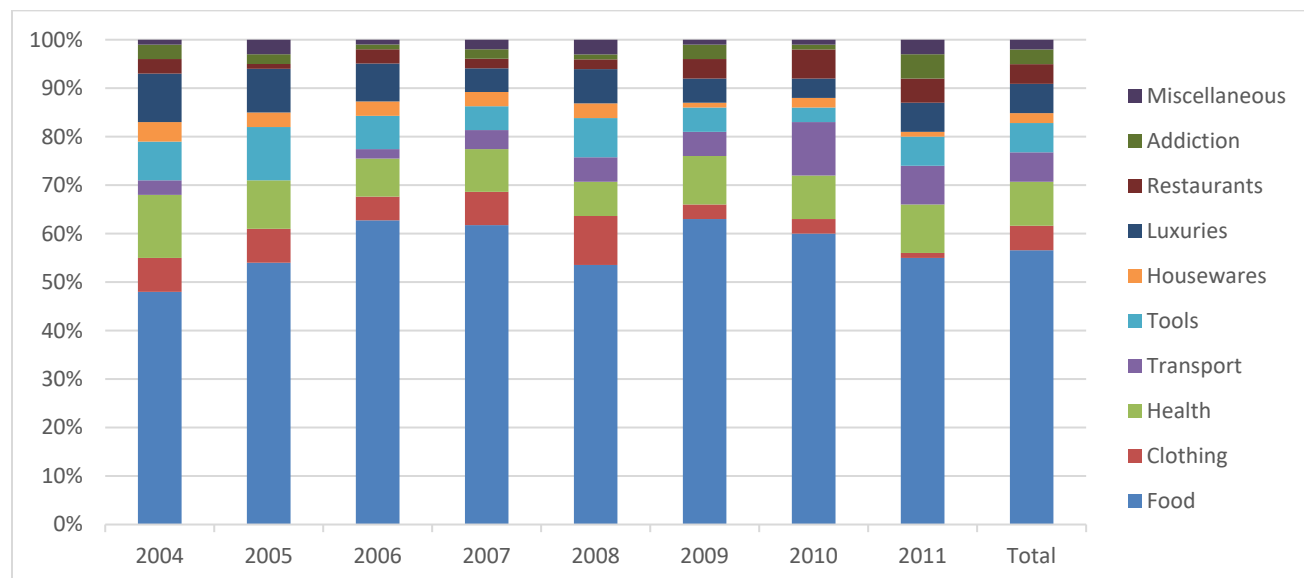
Fig. 8.6B. Share of number of expenditures the past fortnight by women age \geq 16 years: Averages based on yearly surveys 2004-2011



Source: Table 8.13B

[Excel file table_8_13_total_Edited](#)

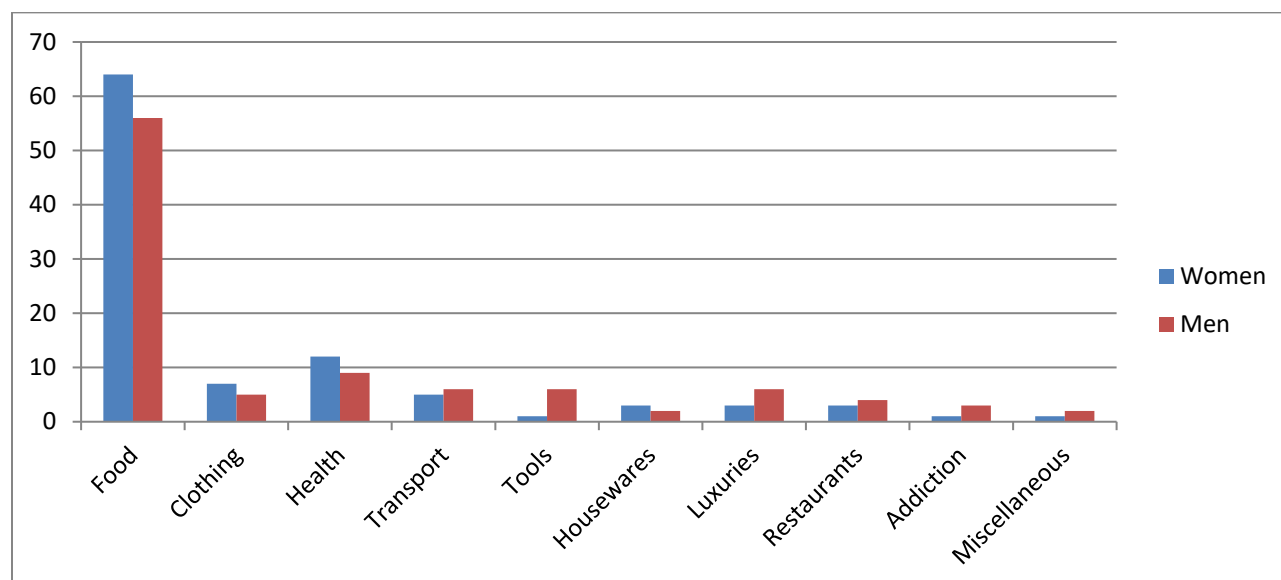
Fig. 8.6C. Share of number of expenditures the past fortnight by men age \geq 16 years: Averages based on yearly surveys 2004-2011



Source: Table 8.13C

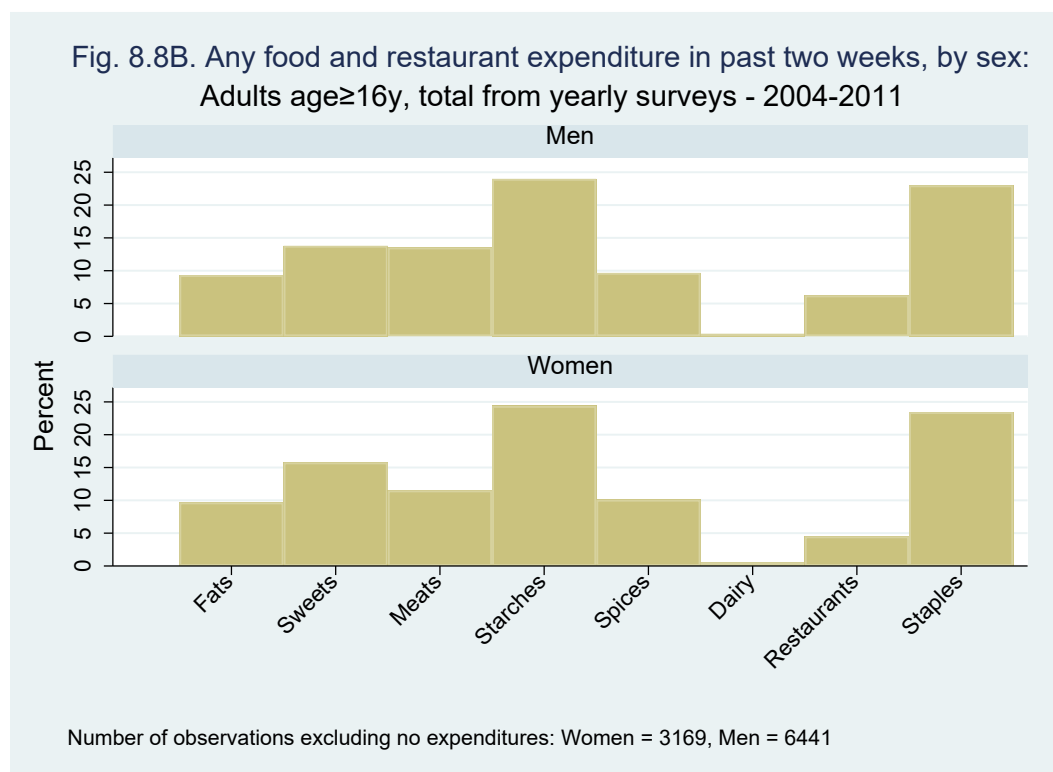
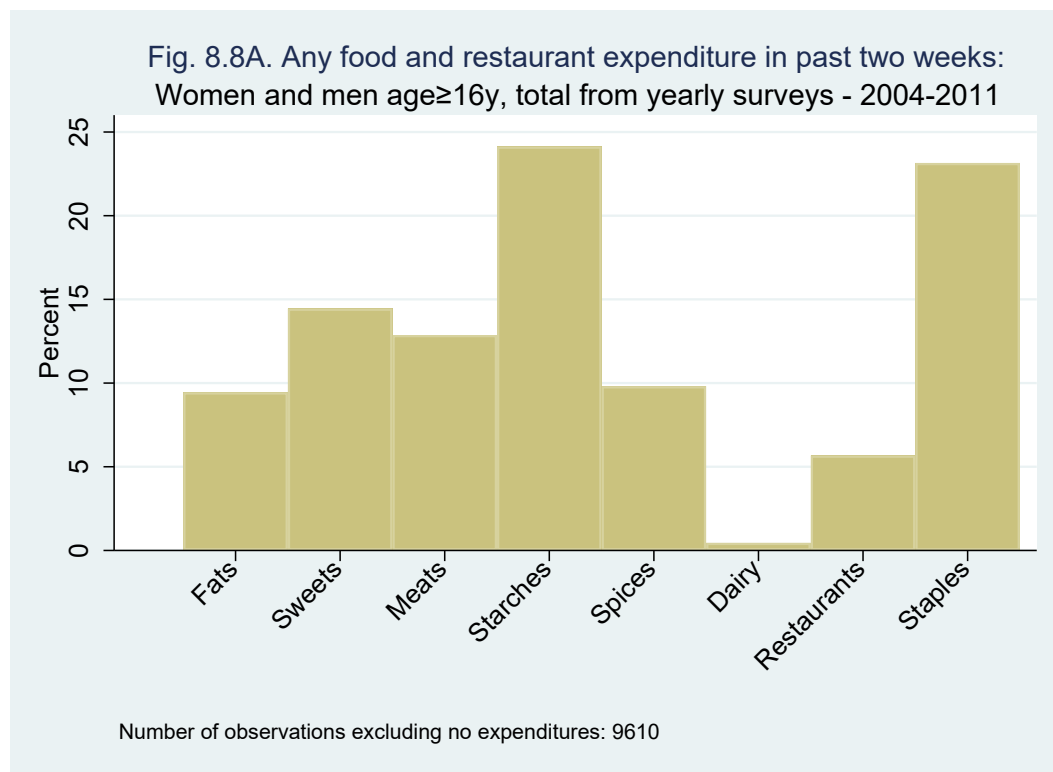
[Excel file table_8_13_total_Edited](#)

Fig. 8.7. Share of number of expenditures the past fortnight by category of expenditure and by sex of person spending cash among people age ≥ 16 years: Total for years 2004-2011

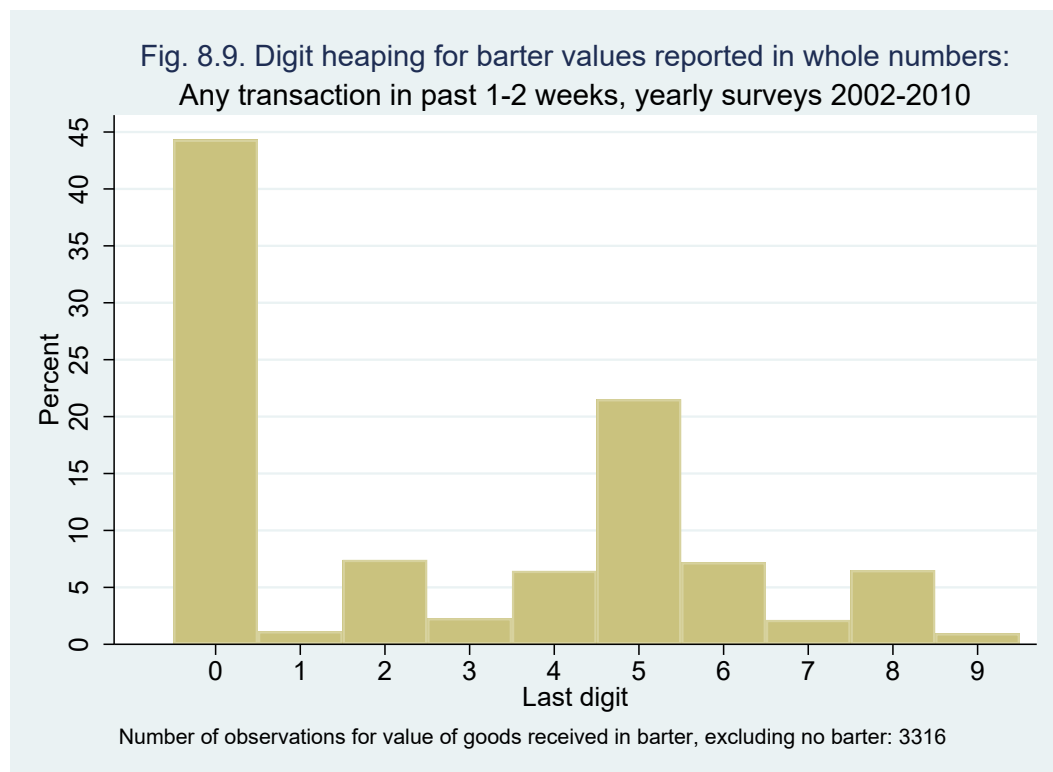


Source: Tables 8.13B-8.13C

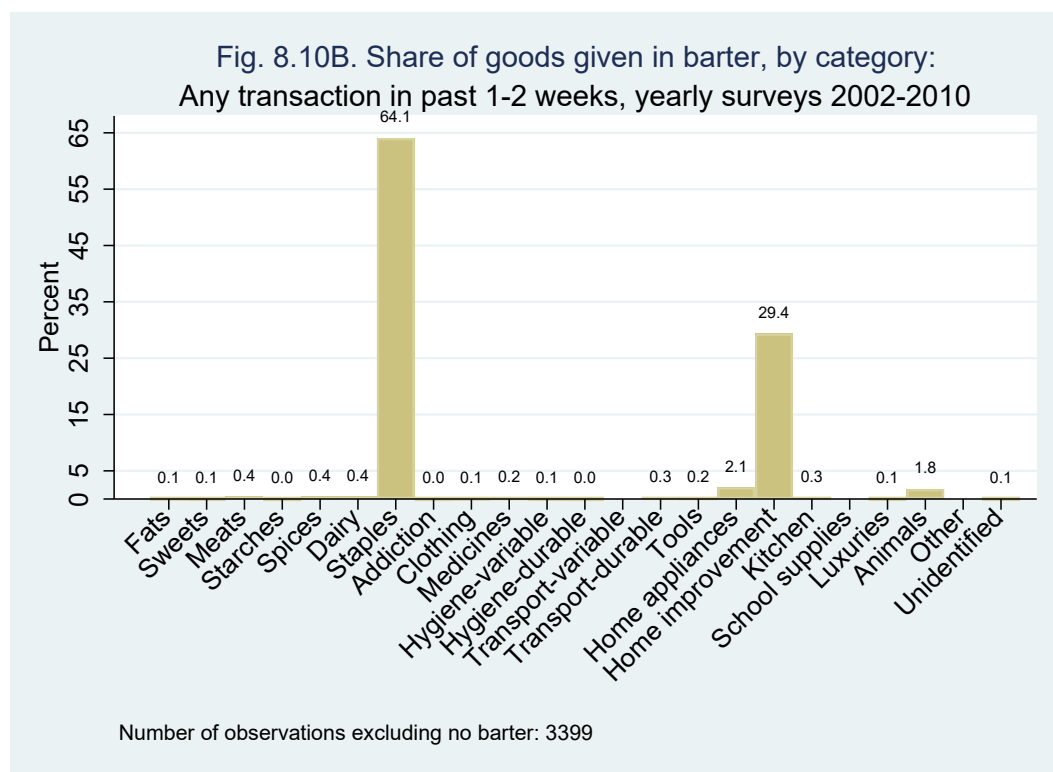
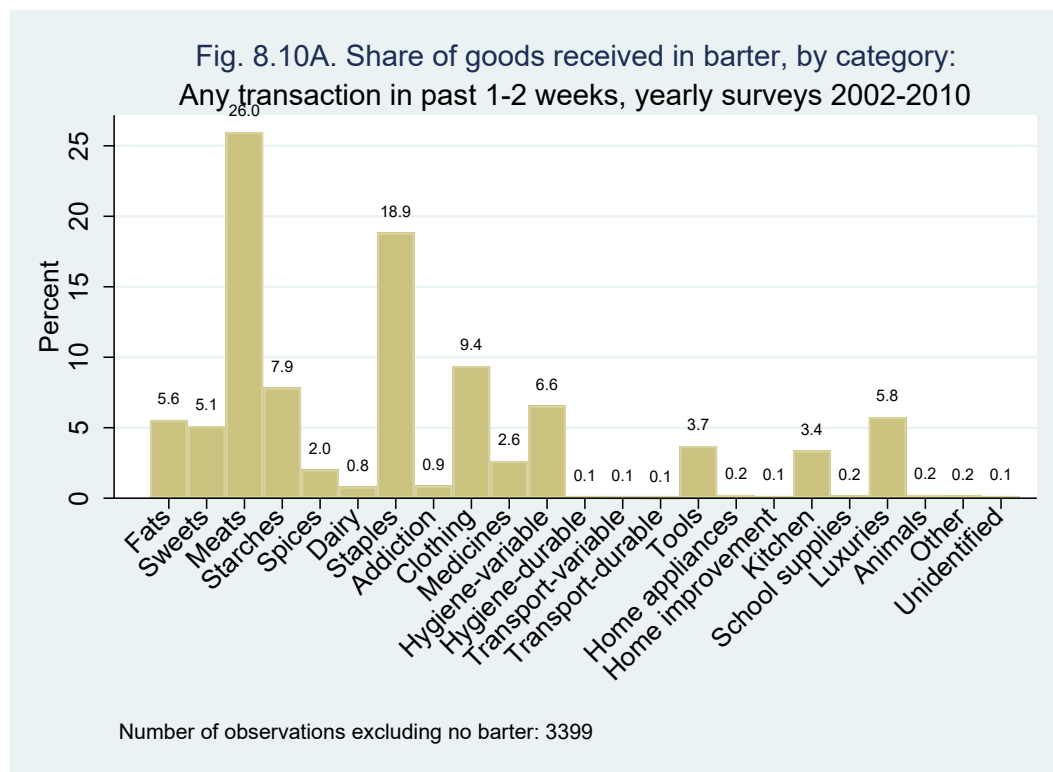
[Excel file table_8_13_total_Edited](#)



Source: Appendix A, Tables A.8.1-A.8.3 and
do file, [anBuy_2_weeks_analysis_Part_b_descriptive_sample_v12](#)



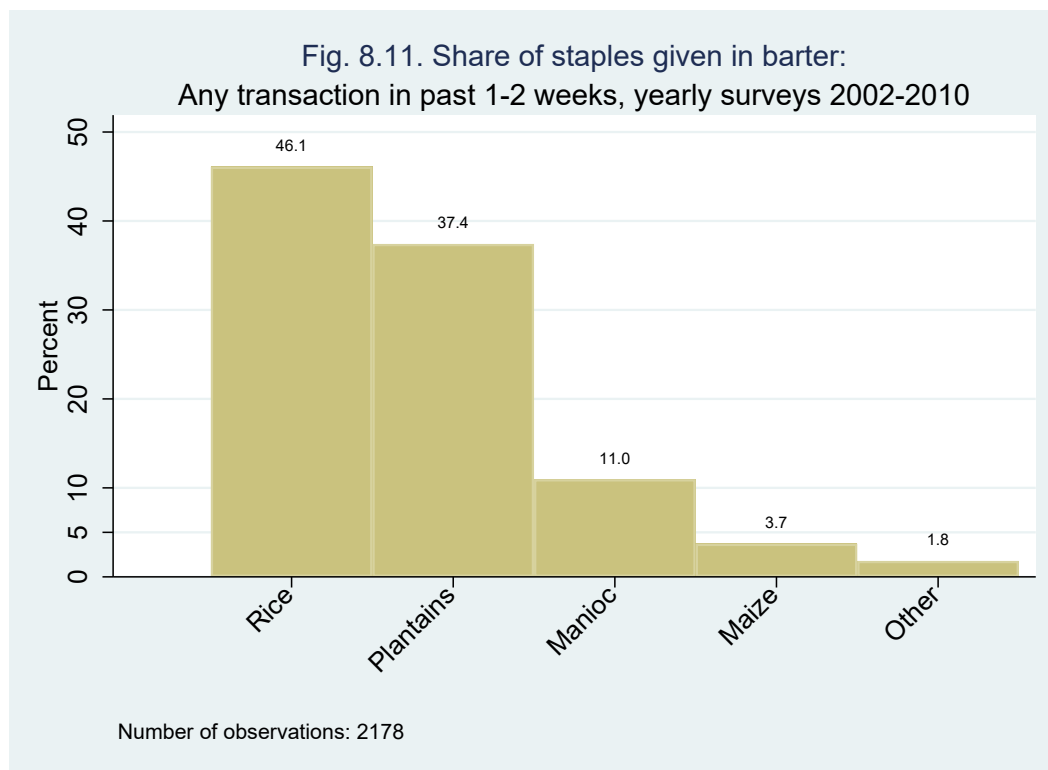
Source: do file, [anBarter_2_weeks_analysis_Part_a_data_quality_v1](#)



Note:

See Table 8.15 for list of goods under each category.

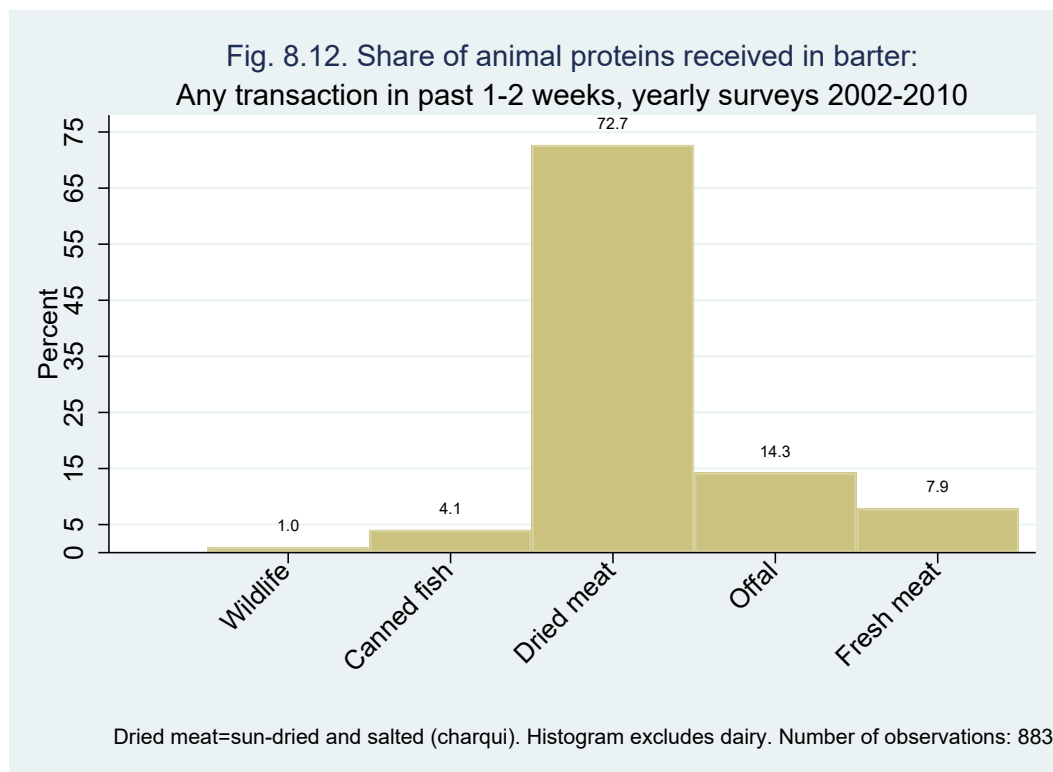
Source: do file, [anBarter_2_weeks_analysis_Part_b_descriptive_sample_v2](#)



Note:

See Table 8.15 for list of goods under each category.

Source: do file, [anBarter_2_weeks_analysis_Part_b_descriptive_sample_v2](#)

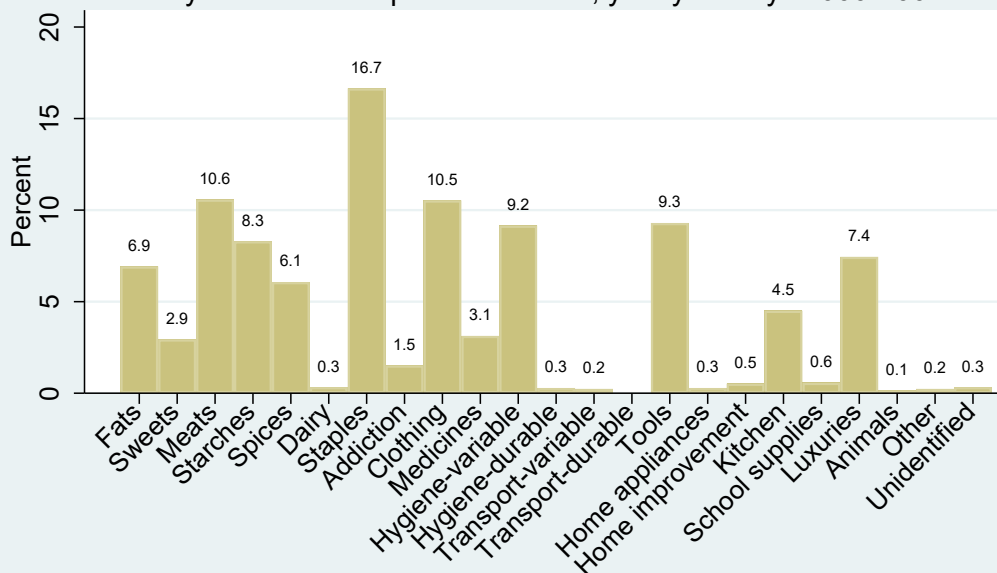


Note:

See Table 8.15 for list of goods under each category.

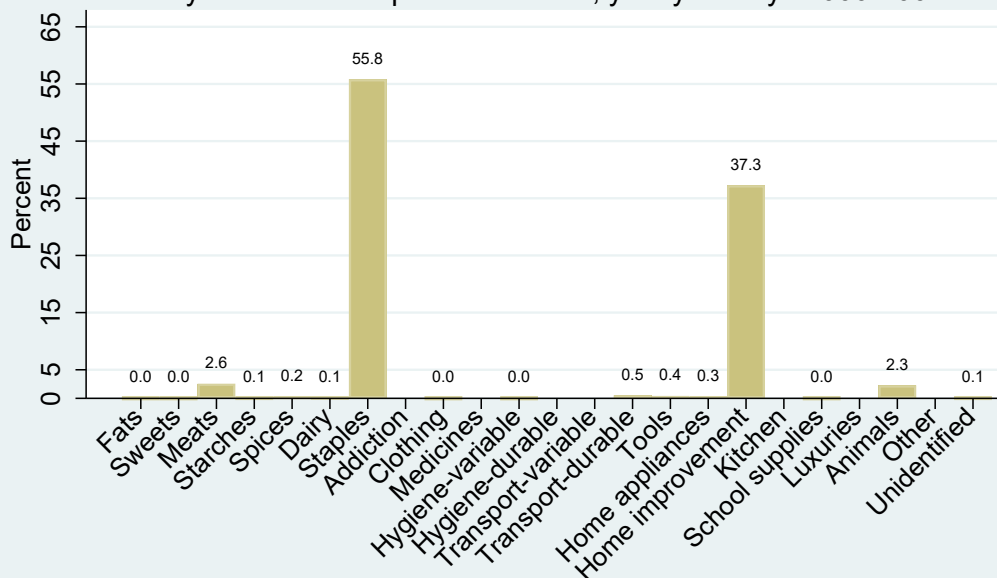
Source: do file, [anBarter_2_weeks_analysis_Part_b_descriptive_sample_v2](#)

Fig. 8.13A. Share of goods household received in barter, by category:
Any transaction in past two weeks, yearly surveys 2000-2001



Number of observations excluding no barter: 2108. No numbers in category = no observations.

Fig. 8.13B. Share of goods households gave in barter, by category:
Any transaction in past two weeks, yearly surveys 2000-2001



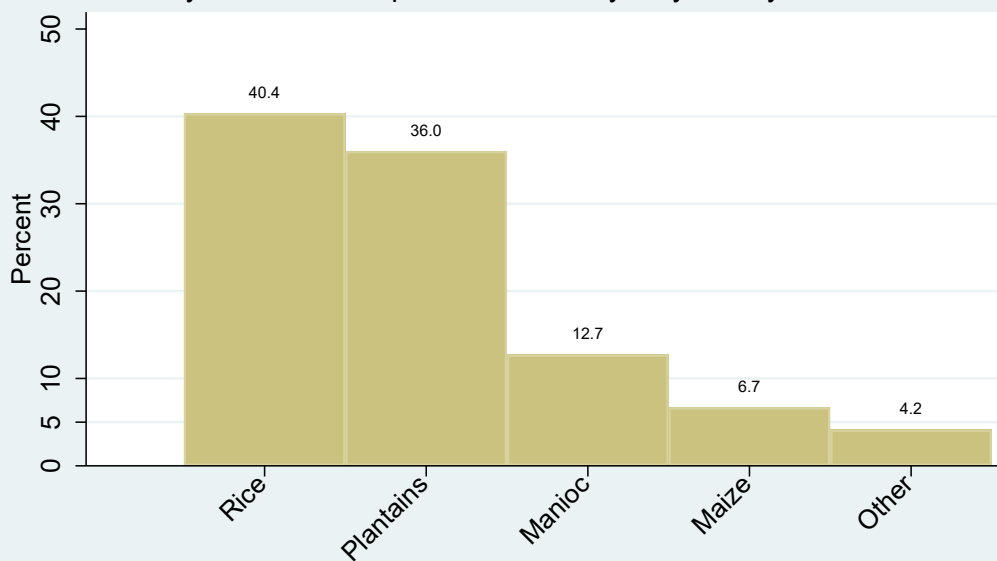
Observations excluding no barter: 2108. Positive values <0.01% rounded to 0.0. No numbers in category = no observations.

Note:

See Table 8.15 for list of goods under each category.

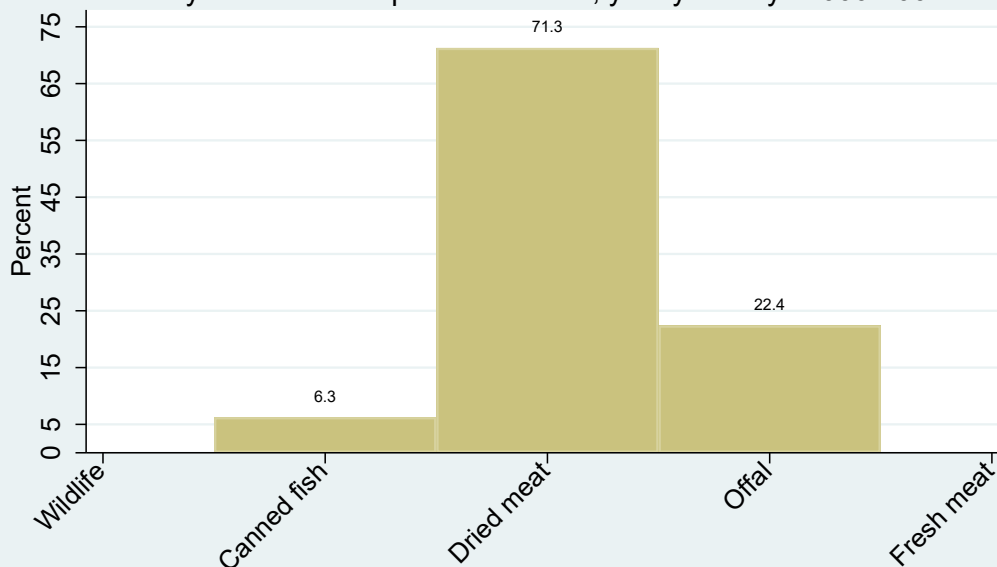
Source: do file, [anBarter_2_weeks_analysis_Part_b_descriptive_sample_HH_2000_02_v1](#)

Fig. 8.14A. Share of staples given in barter:
Any transaction in past two weeks, yearly surveys 2000-2001



Observations excluding no barter: 1177.

Fig. 8.14B. Share of animal proteins received in barter:
Any transaction in past two weeks, yearly surveys 2000-2001

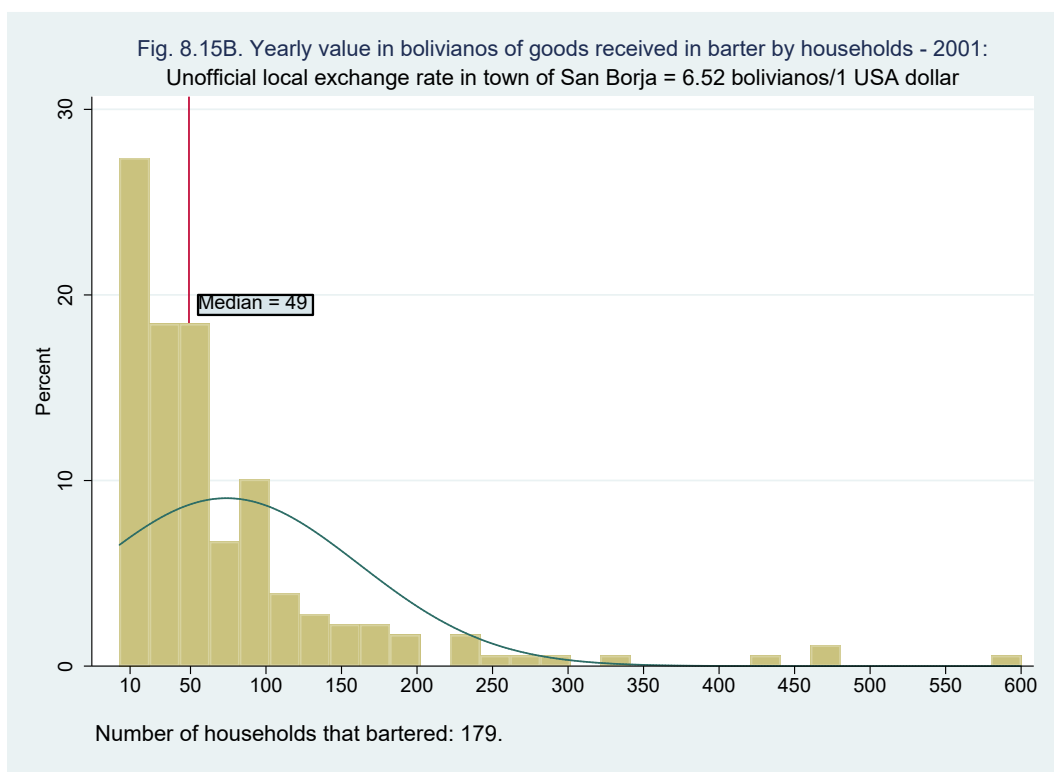
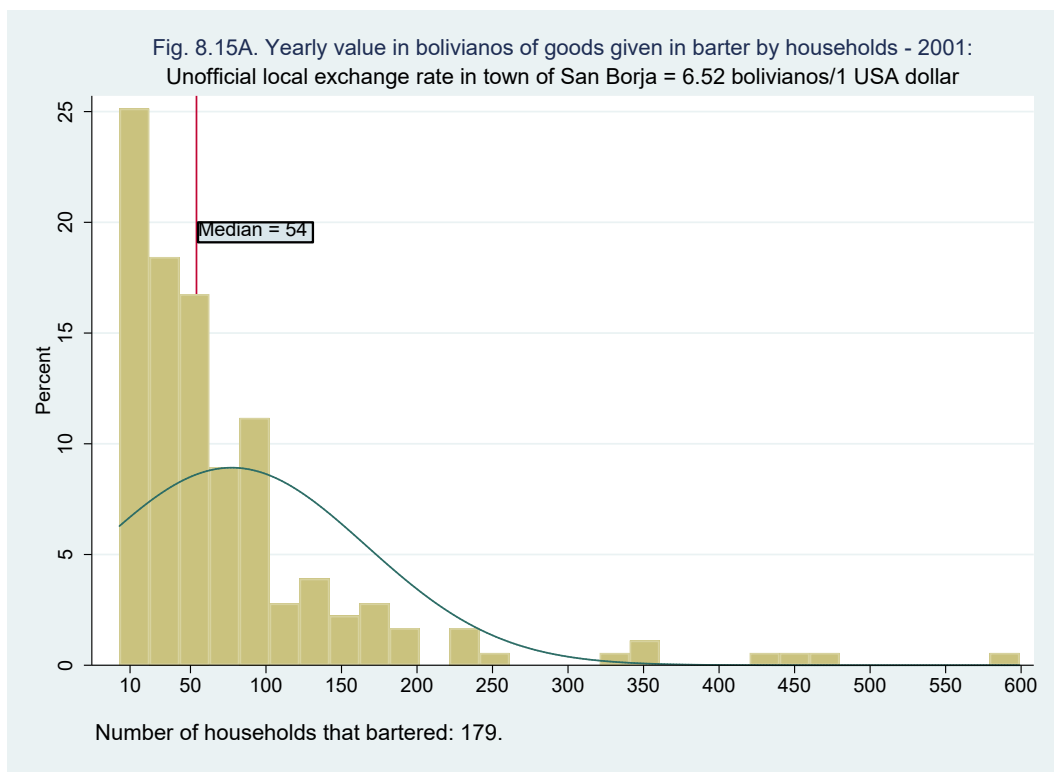


Observations excluding no barter: 223. No numbers in category=no observations. Dried meat=sun-dried & salted (charqui)

Note:

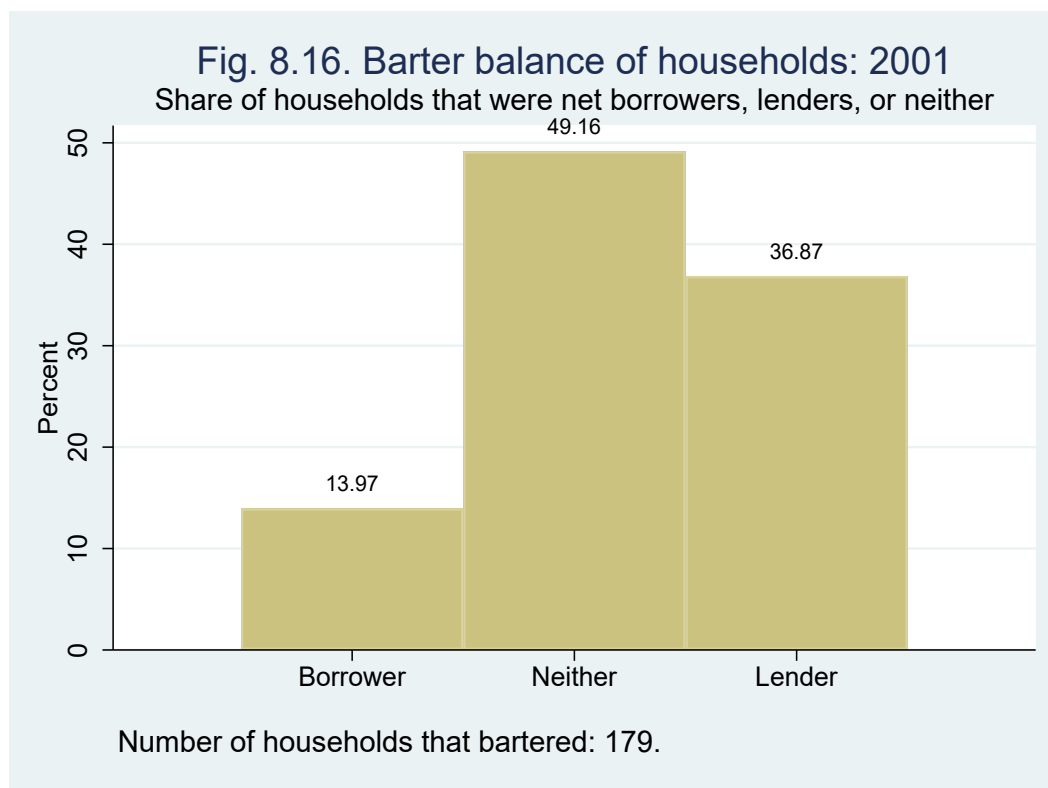
See Table 8.15 for list of goods under each category.

Source: do file, [anBarter_2_weeks_analysis_Part_b_descriptive_sample_HH_2000_02_v1](#)



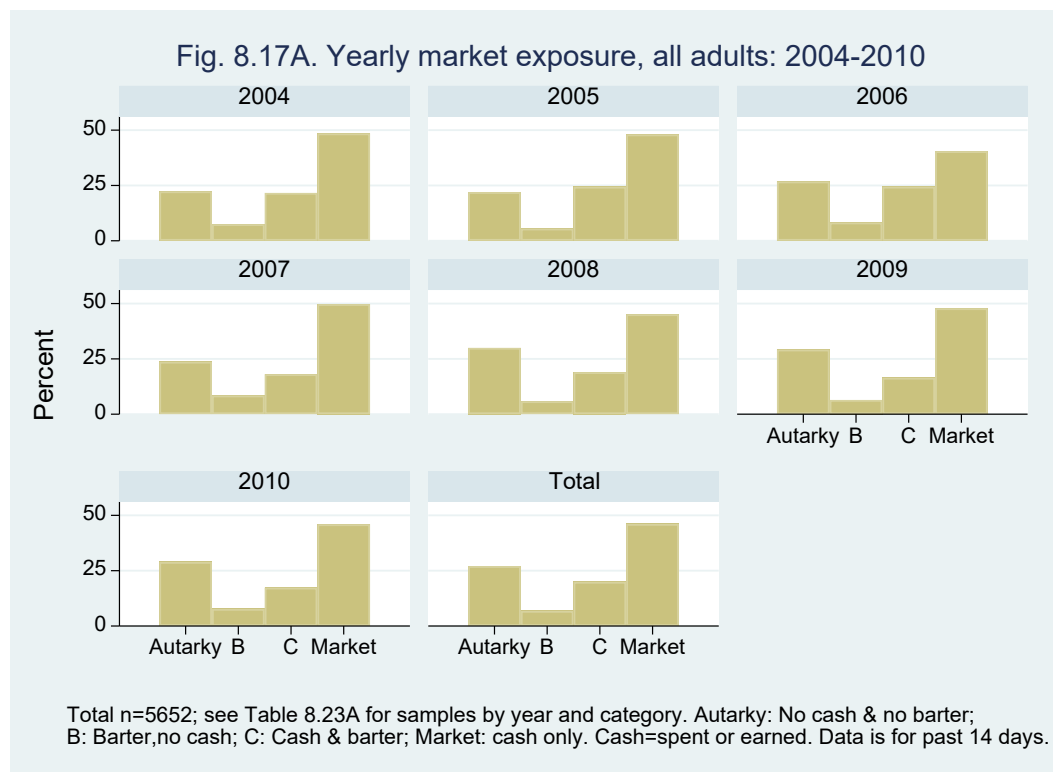
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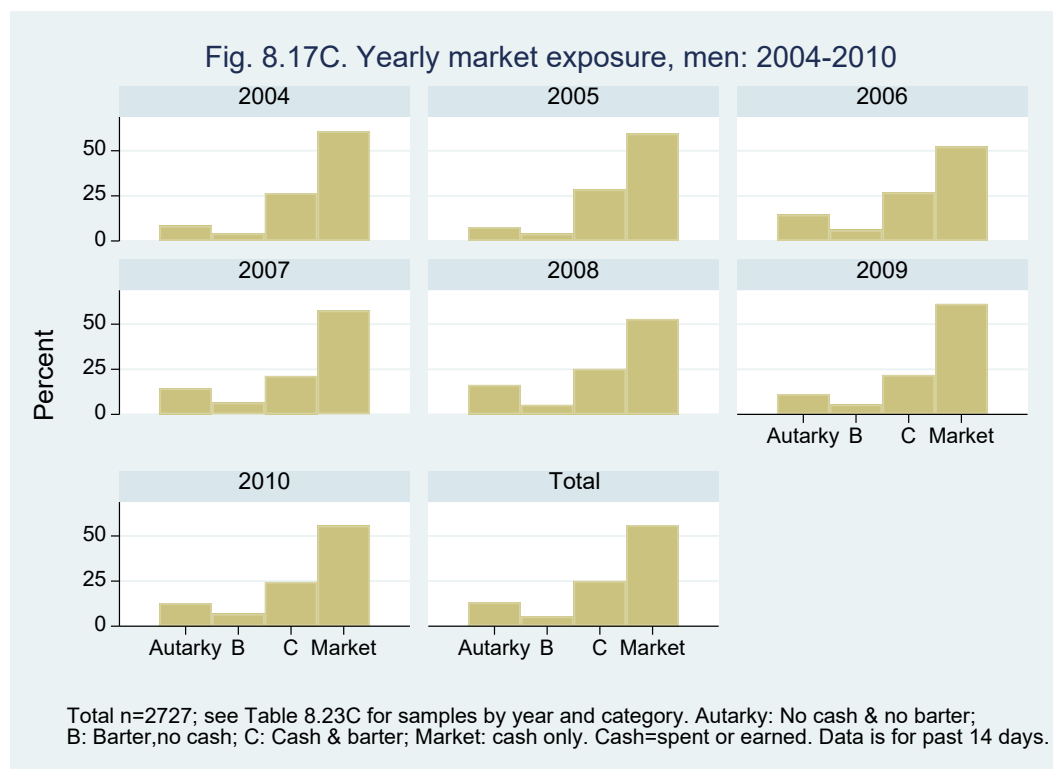
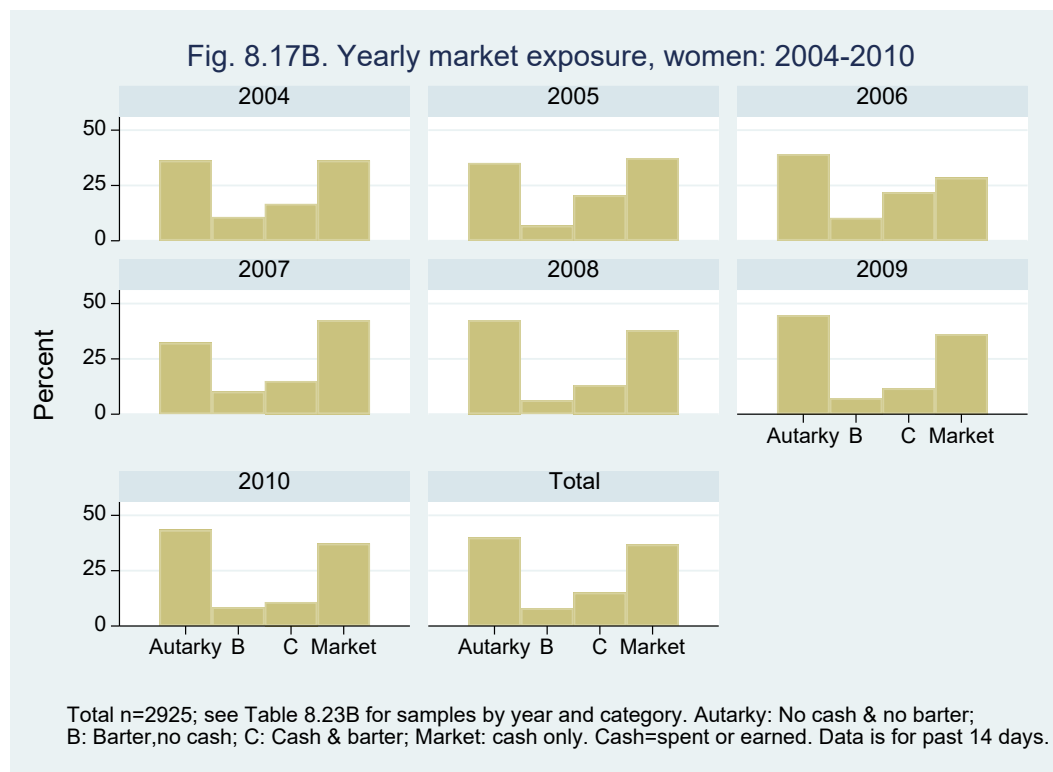
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Note:

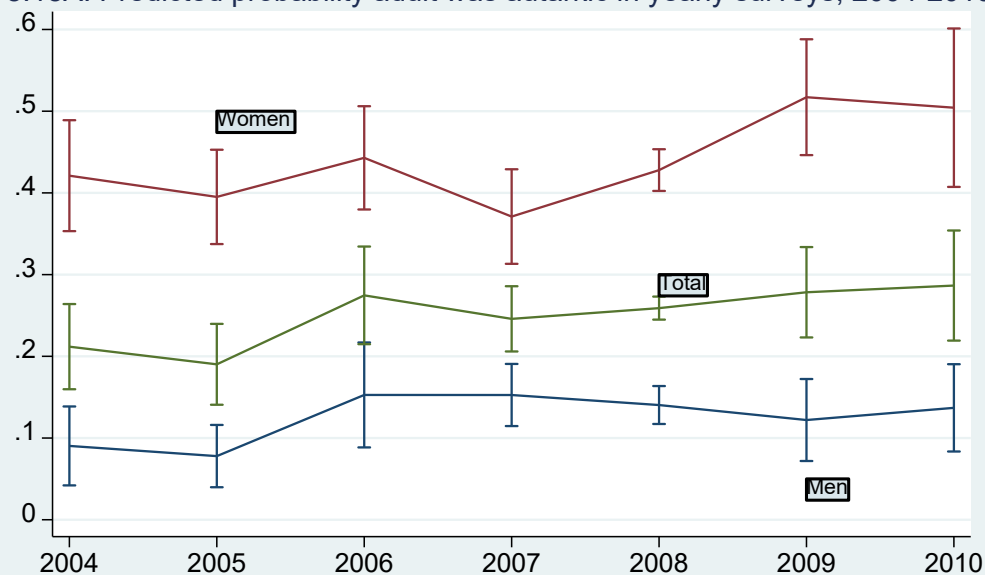
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Source: do file, [anDeficit_2_weeks_analysis_Part_a_descriptive_sample_v2](#)

Fig. 8.18A. Predicted probability adult was autarkic in yearly surveys, 2004-2010



Autarky: no barter or cash transactions in past 14 days. Adjusted predictions come from logit regression with village fixed effects and interaction of gender & year. Vertical bars are 95% confidence intervals. See Tables 8.23A-C for yearly samples.

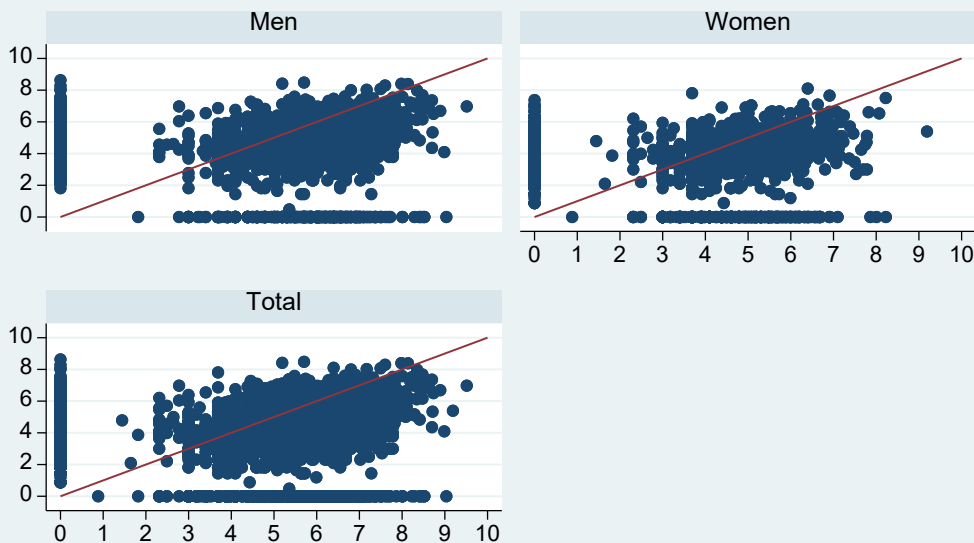
Fig. 8.18B. Predicted probability adult had no cash in yearly surveys, 2004-2010



Outcome: 1 if person was autarkic or bartered, but did not earn or spend cash in past 14 days. Adjusted predictions are from logit regression with village fixed effects and interaction of gender and year. Vertical bars are 95% confidence intervals. See Tables 8.23A-C for yearly samples.

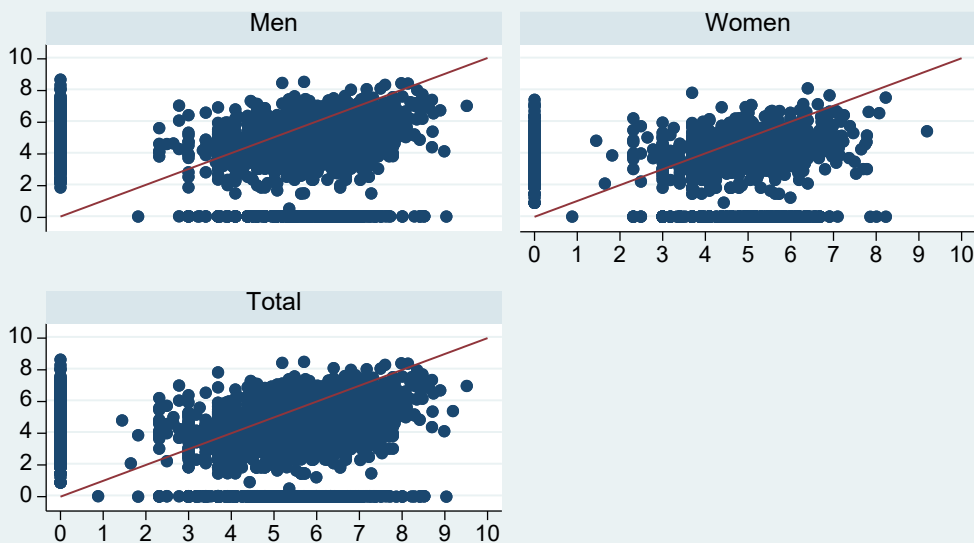
Source: do file, [anDeficit_2_weeks_analysis_Part_a_descriptive_sample_v2](#)

Fig. 8.19A. Association between nominal expenditures (y) and revenues (x), in logs:
By gender and by total sample of non-autarkic adults, based on yearly surveys (2004-2010)



Raw values transformed into logarithms with inverse hyperbolic sine function. N=4121; autarkic people excluded. Data refers to past 14 days. Points above 45-degree line=dissaving; points below=saving. Points along line=people who spent as much as they earned. Expenditures=barter+purchases. Revenues=sales+wage earnings. Sample = bins B, C & Market, as defined in Fig. 8.17.

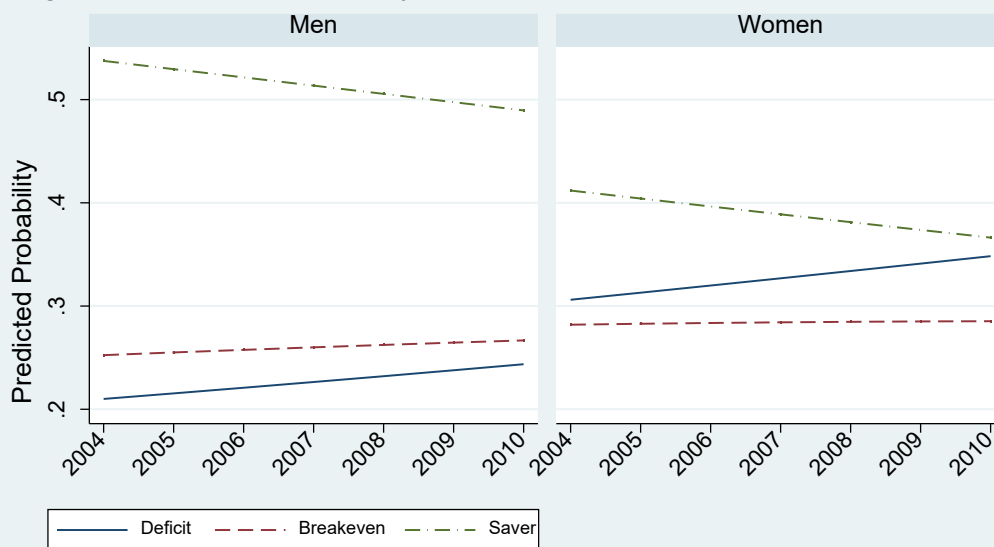
Fig. 8.19B. Association between nominal expenditures (y) and revenues (x), in logs:
By gender and by total sample of adults with cash, based on yearly surveys (2004-2010)



Raw values transformed into logarithms with inverse hyperbolic sine function. N=3735; excluded are autarkic & those who only bartered. Data refers to past 14 days. Points above 45-degree line=dissaving; points below=saving. Points along line=people who spent as much as they earned. Expenditures=barter+purchases. Revenues=sales+wage earnings. Sample=bins C & Market as defined in Fig. 8.17.

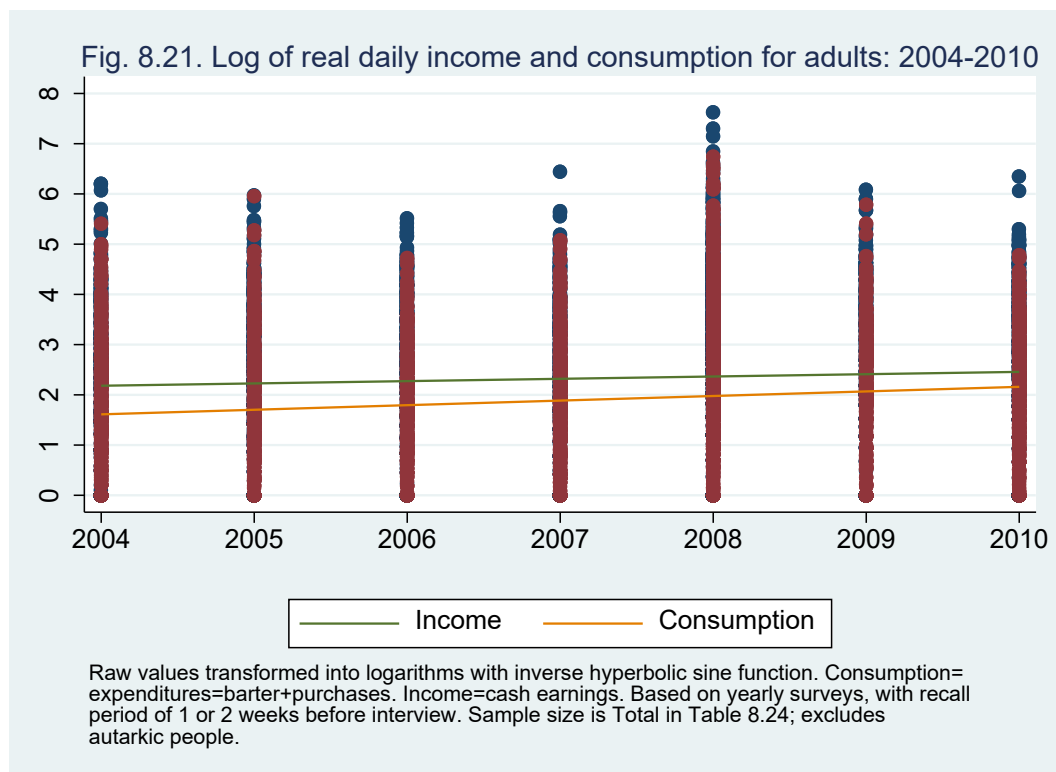
Source: do file, [anDeficit_2_weeks_analysis_Part_a_descriptive_sample_v2](#)

Fig. 8.20. Predicted probability adult would save, break even, or have a deficit



Estimates from ordered logit with gender & survey year as covariates & robust standard errors with clustering by village-year. Saver=cash income>expenditures. Break even=cash income-expenditures=0. Deficit=cash income<expenditures. Expenditure=barter + purchases. Recall period=past 14 days. Data based on yearly surveys.

Source: do file, [anDeficit_2_weeks_analysis_Part_a_descriptive_sample_v2](#)



Source: do file, [anDeficit_2_weeks_analysis_Part_a_descriptive_sample_v2](#)

Table 8.1 Data sources for Chapter 8

<i>Outcome</i>	<i>Data¹</i>	<i>Years</i>	<i>Entity²</i>	<i>Recall period³</i>
Cash expenditures in durable physical assets the past year	TAPS	2004-10	Person	1 year
	RCT-S	2011		2 weeks
Cash expenditure in any good or service the past seven and 8-14 days	TAPS	2004-10	Person	1 week
	RCT-I	2008		2 weeks
	RCT-S	2011		2 weeks
Value and type of items obtained in barter the past seven and 8-14 days	Cross-sectional	2000	Household	2 weeks
	World Bank	2001-02		2 weeks
	5 quarters	2002-03	Person	2 weeks
	TAPS	2003	Household	2 weeks combined
	TAPS	2004-10	Person	2 weeks
	RCT-I	2008	Person	1 week

Notes:

¹TAPS = Tsimane' Amazonian Panel Study. RCT-S = randomized-controlled trial on savings. RCT-I = randomized-controlled trial on income inequality in villages. For RCTs, only baseline data included: RCT-S = 2011, RCT-I = 2008.

²Entity refers to the level at which the outcome was measured. Only people age ≥ 16 years were interviewed, unless they headed a household.

³2 weeks means data was collected separately for the seven and for the 8-14 days before the interview. 2 weeks combined means the data was collected for the entire fortnight, not for each separate week.

Table 8.2. Distinct durable goods bought the past year based on yearly surveys: 2004-2011

Category	Distinct durable goods in the category	Count	
		N	%
Clothing	Bast clothing, generic clothing from the market , hat from market, shoes, sandals, blankets, sewing thread, pants , shirts , cloth to make clothing, sewing needles, brush for clothing, cotton thread, iron for clothing, zipper	14	11
School supplies	Pencil, notebook, eraser, pencil sharpener, book	5	4
Tools and equipment	Fishhook, cartridge for weapon, shotgun, arrow, ax, cutlass, fishing net, net, hammer, chainsaw, rifle, hand saw, fishing line, bullets, shovel, hoe, steelyard, axe handle, seeder, wheelbarrow, rake, pick, fumigator, mill, sewing machine, harvester	26	21
Home improvements	Rope, cotton bag, light bulb, hutch, hand calculator, container (<i>tachón</i>), mattress, plastic cover, wire, tin roof, nails	11	9
Transport	Bicycle, large and small canoe, motorcycle, outboard motor, tire, pump for bicycle tires, repair part for motorcycle, tarp for car, repair part for bicycle	10	8
Hygiene	Mosquito net, comb, walker, towel	5	4
Kitchenware	Bucket, bag, drinking glass, spoon (metal and wood), knife, pot for cooking (metal and clay), grinding stone, metal cup, drinking glasses, plates, pitcher, laddle, table, glass pantry, chair, gallon container, metal tray, frying pan	21	17
Luxuries	Ring, flashlight battery, necklace, radio, watch, flashlight, jewelry, backpack, TV, solar panel, toys, musical instruments, refrigerator, gas container, cooking stove, celular telephone, battery, TV antena, hammock, shoe polish, cassette tapes, electric generator, fan, DVD, small outboard motor, speakers for radios	26	21
Animals	Hen, pig, duck, cow, chicken	5	4
Other	Cigarette lighter, id card, blower (<i>soplador</i>)	3	2
Total		126	100

Source: [Do file, anDurable_yearly_analysis_Part_a_data_quality_v4](#)

Table 8.3. Predictors of rounding yearly purchase whole values to multiples of five, by type of good: 2004-2011

Variables:	(1) All items	(2) Clothing	(3) Tools	(4) Kitchen	(5) Luxuries
Person's sex: Women=1, men=0	-0.066*** (0.008)	-0.043*** (0.009)	0.012 (0.021)	-0.026* (0.016)	-0.042 (0.028)
Survey year: 2004-2011	0.001 (0.003)	-0.007** (0.003)	0.010* (0.006)	0.005 (0.006)	0.004 (0.004)
Nominal value in 100 <i>bolivianos</i>	0.001 (0.001)	0.015** (0.007)	0.001 (0.000)	0.289*** (0.023)	0.007*** (0.002)
Quantity in 10s of items bough	0.005*** (0.001)	0.006* (0.004)	0.004** (0.002)	-0.113*** (0.028)	-0.157 (0.126)
Constant	-1.642 (5.426)	14.199** (6.350)	-19.889* (11.767)	-9.047 (12.273)	-6.800 (8.848)
Observations	15,801	6,624	2,538	4,099	1,392
R-squared	0.018	0.031	0.049	0.115	0.113

Notes:

Regressions are ordinary least squares (OLS) and include fixed effects of village and year and clustering by subjects in a year. Robust standard errors are in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Outcome variable = 1 if transaction value reported in whole number was rounded to multiples of five, and zero otherwise. The record or unit of observation is the transaction; a person could have two records in a year if they reported buying two different goods – each transaction would be evaluated for rounding. Twenty-nine purchases had fractional values and were dropped. Column one includes items in column 2-5, but also other items not shown in the table because the sample size was small (e.g., school supplies, transport).

Source: [Do file, anDurable_yearly_analysis_Part_a_data_quality_v4](#)

Table 8.4. Descriptive statistics: Yearly purchase of durable assets (2004-2011)

	Years								
	(1) 2004 Freq (%)	(2) 2005 Freq (%)	(3) 2006 Freq (%)	(4) 2007 Freq (%)	(5) 2008 Freq (%)	(6) 2009 Freq (%)	(7) 2010 Freq (%)	(8) 2011 Freq (%)	(9) Total Freq (%)
Table 8.4A. Yearly sample - by sex and total									
Men	286 (50)	321 (50)	339 (50)	288 (49)	293 (48)	274 (47)	306 (48)	491 (54)	2,598 (50)
Women	284 (50)	323 (50)	333 (50)	300 (51)	317 (52)	314 (53)	336 (52)	417 (46)	2,624 (50)
Total	570	644	672	588	610	588	642	908	5222
Table 8.4B1. No purchases - total (women and men)									
Purchase	417 (73)	499 (77)	497 (74)	455 (77)	430 (70)	415 (71)	462 (72)	905 (100)	4,080 (78)
No purchase	153 (27)	145 (23)	175 (26)	133 (23)	180 (30)	173 (29)	180 (28)	3 (0)	1,142 (22)
Total	570	644	672	588	610	588	642	908	5222
Table 8.4B2. No purchases – women									
Purchase	159 (56)	195 (60)	197 (59)	187 (62)	175 (55)	165 (53)	185 (55)	414 (99)	1,677 (64)
No purchase	125 (44)	128 (40)	136 (41)	113 (38)	142 (45)	149 (47)	151 (45)	3 (1)	947 (36)
Total	284	323	333	300	317	314	336	417	2624
Table 8.4B3. No purchases – men									
Purchase	258 (90)	304 (95)	300 (88)	268 (93)	255 (87)	250 (91)	277 (91)	491 (100)	2,403 (92)
No purchase	28 (10)	17 (5)	39 (12)	20 (7)	38 (13)	24 (9)	29 (9)		195 (8)
Total	286	321	339	288	293	274	306	491	2598

Table 8.4. Descriptive statistics: Yearly purchase of durable assets (2004-2011) - continued

		Years								
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		2004	2005	2006	2007	2008	2009	2010	2011	Total
		Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Table 8.4C. Mean number of goods bought by sex										
	Women	2.33	2.25	2.31	2.21	2.05	2.27	2.16	4.96	2.90
	Men	3.12	3.54	4.21	4.62	3.73	4.33	4.20	6.89	4.56
	Both	2.82	3.04	3.46	3.63	3.05	3.51	3.39	6.01	3.88
Table 8.4D. Mean yearly nominal value of purchases by sex										
	Women	136.09	119.11	119.39	102.95	130.96	146.24	139.58	286.77	166.51
	Men	386.59	339.87	407.37	446.04	470.96	817.84	672.43	1,056.79	613.61
	Both	291.07	253.60	293.22	305.04	332.59	550.82	459.06	704.54	429.84

Notes:

Tables 8.4C-8.4D exclude people who did not buy durable assets the past year.

Source: Do file, anDurable_yearly_analysis_Part_b_descriptive_sample_v11

Table 8.5. Frequency and percent of durable assets bought/year by women and men age≥16 years: Yearly surveys (2004-2011)

	Year								
	(1) 2004 Freq (%)	(2) 2005 Freq (%)	(3) 2006 Freq (%)	(4) 2007 Freq (%)	(5) 2008 Freq (%)	(6) 2009 Freq (%)	(7) 2010 Freq (%)	(8) 2011 Freq (%)	(9) Total Freq (%)
Table 8.5A. Women and men									
Category:									
Clothing	364 (31)	466 (31)	699 (41)	728 (44)	516 (39)	736 (51)	725 (46)	2,392 (44)	6,626 (42)
School supplies	19 (2)		1 (0)	2 (0)	1 (0)		1 (0)	3 (0)	27 (0)
Tools and equipment	243 (21)	334 (22)	316 (18)	308 (19)	265 (20)	218 (15)	234 (15)	621 (11)	2,539 (16)
Home improvements	4 (0)	6 (0)	10 (1)	10 (1)	11 (1)	9 (1)	17 (1)	97 (2)	164 (1)
Transport	34 (3)	24 (2)	24 (1)	14 (1)	18 (1)	17 (1)	22 (1)	43 (1)	196 (1)
Hygiene	72 (6)	118 (8)	100 (6)	73 (4)	33 (3)	58 (4)	53 (3)	180 (3)	687 (4)
Kitchenware	321 (27)	398 (26)	419 (24)	384 (23)	347 (26)	309 (21)	354 (23)	1,587 (29)	4,119 (26)
Luxuries	111 (9)	154 (10)	139 (8)	126 (8)	116 (9)	108 (7)	154 (10)	484 (9)	1,392 (9)
Other		1 (0)	3 (0)	1 (0)	1 (0)		2 (0)		8 (0)
Animals	8 (1)	15 (1)	7 (0)	5 (0)	3 (0)	2 (0)	2 (0)	30 (1)	72 (0)
Total	1176	1516	1718	1651	1311	1457	1564	5437	15830

Table 8.5. Frequency and percent of durable assets bought/year by women and men age≥16 years: Yearly surveys (2004-2011) - continued

	Year								
	(1) 2004 Freq (%)	(2) 2005 Freq (%)	(3) 2006 Freq (%)	(4) 2007 Freq (%)	(5) 2008 Freq (%)	(6) 2009 Freq (%)	(7) 2010 Freq (%)	(8) 2011 Freq (%)	(9) Total Freq (%)
Table 8.5B. Women									
Category:									
Clothing	128 (35)	151 (34)	215 (47)	211 (51)	174 (48)	211 (56)	233 (58)	959 (47)	2,282 (47)
School supplies	1 (0)			2 (0)					3 (0)
Tools and equipment	38 (10)	49 (11)	38 (8)	35 (8)	23 (6)	17 (5)	23 (6)	147 (7)	370 (8)
Home improvements		1 (0)	3 (1)	3 (1)	4 (1)	3 (1)	7 (2)	41 (2)	62 (1)
Transport	6 (2)	5 (1)	2 (0)	2 (0)			2 (1)	2 (0)	19 (0)
Hygiene	21 (6)	25 (6)	20 (4)	17 (4)	6 (2)	11 (3)	4 (1)	61 (3)	165 (3)
Kitchenware	163 (44)	185 (42)	166 (36)	135 (33)	138 (38)	120 (32)	120 (30)	727 (35)	1,754 (36)
Luxuries	12 (3)	19 (4)	8 (2)	7 (2)	12 (3)	13 (3)	11 (3)	104 (5)	186 (4)
Other		1 (0)	1 (0)						2 (0)
Animals	2 (1)	3 (1)	3 (1)	2 (0)	2 (1)			12 (1)	24 (0)
Total	371	439	456	414	359	375	400	2053	4867

Table 8.5. Frequency and percent of durable assets bought/year by women and men age≥16 years: Yearly surveys (2004-2011) - continued

	Year								
	(1) 2004 Freq (%)	(2) 2005 Freq (%)	(3) 2006 Freq (%)	(4) 2007 Freq (%)	(5) 2008 Freq (%)	(6) 2009 Freq (%)	(7) 2010 Freq (%)	(8) 2011 Freq (%)	(9) Total Freq (%)
Table 8.5C. Men									
Category:									
Clothing	236 (29)	315 (29)	484 (38)	517 (42)	342 (36)	525 (49)	492 (42)	1,433 (42)	4,344 (40)
School supplies	18 (2)		1 (0)		1 (0)		1 (0)	3 (0)	24 (0)
Tools and equipment	205 (25)	285 (26)	278 (22)	273 (22)	242 (25)	201 (19)	211 (18)	474 (14)	2,169 (20)
Home improvements	4 (0)	5 (0)	7 (1)	7 (1)	7 (1)	6 (1)	10 (1)	56 (2)	102 (1)
Transport	28 (3)	19 (2)	22 (2)	12 (1)	18 (2)	17 (2)	20 (2)	41 (1)	177 (2)
Hygiene	51 (6)	93 (9)	80 (6)	56 (5)	27 (3)	47 (4)	49 (4)	119 (4)	522 (5)
Kitchenware	158 (20)	213 (20)	253 (20)	249 (20)	209 (22)	189 (17)	234 (20)	860 (25)	2,365 (22)
Luxuries	99 (12)	135 (13)	131 (10)	119 (10)	104 (11)	95 (9)	143 (12)	380 (11)	1,206 (11)
Other			2 (0)	1 (0)	1 (0)		2 (0)		6 (0)
Animals	6 (1)	12 (1)	4 (0)	3 (0)	1 (0)	2 (0)	2 (0)	18 (1)	48 (0)
Total	805	1077	1262	1237	952	1082	1164	3384	10963

Notes:

See Table 8.2 for definition of categories.

Source: Do file, anDurable_yearly_analysis_Part_b_descriptive_sample_v11

Table 8.6. Predictors of yearly purchases of durable items: Yearly surveys (2004-2011)

Variables:	(1) None	(2) Number	(3) Quantity	(4) Value	(5) Clothing	(6) Luxuries	(7) Tools	(8) Kitchen	(9) Regret
Survey year: 2004-2011	-0.035*** (0.003)	0.031*** (0.006)	0.012 (0.009)	0.019 (0.016)	0.028*** (0.006)	-0.000 (0.004)	-0.007 (0.005)	-0.010* (0.005)	0.004 (0.006)
Person's sex: Women=1, men=0	0.288*** (0.010)	-0.310*** (0.018)	0.123*** (0.029)	-0.605*** (0.044)	0.053*** (0.019)	-0.091*** (0.009)	-0.11*** (0.012)	0.190*** (0.018)	0.051*** (0.019)
Constant	69.831*** (5.623)	-60.272*** (11.364)	-24.410 (19.028)	-33.765 (32.766)	-56.759*** (12.445)	0.622 (8.417)	14.394 (9.477)	21.429* (11.017)	-8.502 (11.084)
Observations	5,222	3,196	3,196	3,196	3,196	3,196	3,196	3,196	1,193
R-squared	0.217	0.263	0.035	0.082	0.045	0.050	0.054	0.064	0.101

Notes:

Regressions are OLS and include village and year fixed effects and clustering by subjects in a year. Robust standard errors are in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Outcomes for columns 2-4 are in natural logarithms. The outcome in column 2 refers to the unique number of goods bought whereas the outcome in column 3 refers to the quantity of the item. For example, a person bought 3 (column 3) shirts (column 2). The outcome in column 4 refers to nominal values. Other outcomes are binary variables for whether person did not buy a good (column 1) or bought clothing, luxuries, tools, kitchenware, and felt buyer's regret (columns 5-9). Samples in columns 2-8 include only subjects who had bought a durable good during the past year. Each record or row of data in a regression contains information for an individual without repeats. We only measured regret in 2006 and 2011 by asking people if they regretted having bought the item. [Table 8.2](#) lists the goods included in columns 5-8.

Source: [Do file, anDurable_yearly_analysis_Part_b_descriptive_sample_v11](#)

Table 8.7. Distinct expenditures the past two weeks based on yearly surveys: 2004-2011

Category	Distinct expenditure in the category	Count	
		N	%
Food:			
Fats	Cooking oil and lard	2	0.82
Sweets	Soda, crackers (sweet and salted), popcorn, candy, chewing gum, Kool-Aid-type drink (<i>yupi</i>), ice cream, sugar cane, caramel milk (<i>dulce de leche</i>)	9	3.69
Meats	Includes an assortment of fish, wild terrestrial animals, fish, and meats from domesticated animals (e.g., cow head, sun-dried salted meat, sausages, tripe, bones). It also includes canned fish	34	13.93
Starches	Bread, pasta, wheat flour, and sun-dried manioc flour	4	1.64
Spices	Salt, generic spices, honey, unrefined sugar (<i>chancaca</i>), tea, sugar cane juice, garlic, coffee, onions, chocolate, pepper, garlic	12	4.92
Dairy	Milk, cheese, eggs	3	1.23
Restaurant	Meals in a restaurant	1	0.41
Staples	Sugar (white, refined), canned food (excluding fish), rice, cacao, oranges, manioc, plantains, watermelon, squash, maize, peas, mandarin, tomatoes, cucumbers, sorghum, potatoes, carrots, cabbage, provisions	23	9.43
<i>Subtotal food</i>		<i>(88)</i>	<i>(36.07)</i>
Addiction	Home fermented beverage (<i>chicha</i>), beer, cigarettes, tobacco, coca, alkaline substance to complement coca, hard liquor	7	2.87
Clothing	Bast clothing, generic clothing from the market, hat from the market, shoes, sandals, blankets, sewing thread, pants, shirts, cloth to make clothing, sewing needles, zipper, cotton thread	12	4.92
Health and hygiene:			
Medicines	Iodine, rubbing alcohol, vitamins, aspirine, antibiotics, antibiotic creams, and medicines identified by their brand name	24	9.84
Hygiene-variable	Shampoo, soaps (personal use and laundry), toothpaste, toilet paper	9	3.69
Hygiene-durables	Mosquito net, comb (plastic and traditional), tweezers, toothbrush, walker	6	2.46
<i>Subtotal health and hygiene</i>		<i>(39)</i>	<i>(15.98)</i>
Transport:			
Variable	Oil, gasoline, diesel, fares	4	1.64
Durables	Bicycle, large and small canoe, tire, pump for bicycle, repair part for motorcycle, repair part for bicycle	7	2.87
<i>Subtotal transport</i>		<i>(11)</i>	<i>(4.51)</i>
Tools	Fishhook, adult bow and arrow, cartridge for weapon, shotgun, ax, cutlass, fishing net, hammer, rifle, hand saw, fishing line, bullets, shovel, hoe, steelyard, seeder, wheelbarrow, fumigator, mill	19	7.79

Table 8.7. Distinct expenditure the past two weeks based on yearly surveys: 2004-2011
- continued

Category	Distinct expenditure in the category	Count	
		N	%
Housewares:			
Appliances	Rope, woven mat, candles, light bulb, mirror, container (<i>tachón</i>), hutch	7	2.87
Improvements	Barb wire, tin roof, nails, thatch palm for roofing, other roofing	5	2.05
Kitchen	Bucket, bag, drinking glass, metal spoon, knife, pot for cooking (metal and clay), grinding stone, metal collander, metal cup, drinking glasses, kerosene, plates, chair, gallon container, metal tray, frying pan	17	6.97
<i>Subtotal housewares</i>		(29)	(11.98)
School supplies	Pencil, notebook, eraser, pencil sharpener, book	5	2.05
Luxuries	Ring, flashlight battery, necklace, radio, watch, flashlight, cosmetics, jewelry, backpack, toys, refrigerator, gas container, cooking stove, battery, ball, hammock, shoe polish, cassette tapes, electric generator	19	7.79
Animals	Rabbit, hen, dog, parrot, pig, duck, chicken	7	2.87
Other	Cigarette lighter, salaries paid, ant poison, hotel lodging, id card, repayment of credit, miscellaneous	8	3.28
Total		244	100

Notes:

See text for why numbers in column *N* do not always equal the total number of distinct expenditures listed in the middle column.

Source: [Do file, anBuy_2_weeks_analysis_Part_a_data_quality_v2](#)

Table 8.8. Test of telescoping bias for the chance of incurring different expenditures the past two weeks: Yearly surveys (2004-2011)

Variables:	Outcome is a binary variable if person incurred an expenditure in:							
	(1) Any good	(2) Food	(3) Clothing	(4) Health	(5) Transport	(6) Tools	(7) Housewares	(8) Luxuries
Week: 1=past 7 days; 0=past 8-14 days	0.245*** (0.009)	0.055*** (0.018)	-0.026*** (0.010)	-0.026*** (0.010)	0.006 (0.004)	0.005 (0.008)	0.001 (0.005)	-0.008 (0.010)
Person's sex: 1=female; 0=male	-0.20*** (0.009)	0.005 (0.015)	0.058*** (0.009)	0.038*** (0.008)	-0.002 (0.005)	-0.05*** (0.006)	0.011* (0.005)	-0.03*** (0.008)
Survey year: 2004-2011	0.033*** (0.003)	0.039*** (0.005)	-0.013*** (0.003)	-0.011*** (0.003)	0.001 (0.001)	-0.002 (0.003)	-0.005*** (0.002)	-0.007** (0.003)
Constant	-65.8*** (6.055)	-78.051*** (10.429)	26.515*** (5.593)	22.252*** (5.382)	-1.458 (2.374)	3.505 (5.443)	11.036*** (3.662)	13.765** (5.633)
Observations	10,261	3,565	3,565	3,565	3,565	3,565	3,565	3,565
R-squared	0.201	0.075	0.070	0.045	0.025	0.048	0.025	0.069

Notes:

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Regressions are ordinary least squares (OLS) and include village and year fixed effects and clustering by subjects in a year. Outcomes took the value of one if the person made an expenditure in the previous fortnight, and zero otherwise. In the regressions, for any type of expenditure I include one observation for each person in a week. See [Table 8.7](#) for a list of items under each type of expenditure.

Source: [Do file, anBuy_2_weeks_analysis_Part_a_data_quality_v2](#)

Table 8.9. Test of telescoping bias for number of expenditures the past two weeks: Yearly surveys (2004-2011)

Variables:	Outcome is continuous variable for number of expenditures in:							
	(1) Food	(2) Clothing	(3) Health	(4) Transport	(5) Tools	(6) Housewares	(7) Luxuries	(8) Any good
Week: 1=past 7 days; 0=past 8-14 days	0.664*** (0.115)	0.371* (0.194)	0.085 (0.273)	1.828 (2.891)	1.503** (0.578)	2.136*** (0.482)	0.453 (0.284)	0.757*** (0.093)
Person's sex: 1=female; 0=male	-1.389*** (0.105)	-0.793*** (0.207)	-0.314 (0.219)	-2.190 (1.945)	-1.594** (0.709)	-0.859** (0.423)	-1.388*** (0.382)	-1.360*** (0.086)
Survey year: 2004-2011	0.587*** (0.038)	-0.165 (0.169)	0.326*** (0.110)	0.242 (0.610)	0.738*** (0.141)	0.261** (0.116)	0.297*** (0.098)	0.596*** (0.032)
Constant	-1,177.77*** (76.143)	332.507 (338.007)	-650.223*** (219.704)	-482.133 (1,223.244)	-1,480.326*** (283.760)	-521.370** (231.625)	-590.494*** (196.847)	-1,190.340*** (63.576)
Observations	2,607	191	157	51	170	71	210	3,565
R-squared	0.358	0.449	0.365	0.571	0.512	0.707	0.461	0.340

Notes:

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Regressions are ordinary least squares (OLS) and include village and year fixed effects and clustering by subjects in a year. Outcome is the number of expenditures during a week. Under each column, the sample size includes people who spent; for example, in the fourth column there are 51 observations for people who spent on transport during each of the past two weeks. See [Table 8.7](#) for a list of goods under each type of expenditure.

Source: [Do file, anBuy_2_weeks_analysis_Part_a_data_quality_v2](#)

Table 8.10. Test of telescoping bias for value of expenditures the past two weeks: Yearly surveys (2004-2011)

Variables:	Outcome is natural logarithm of expenditures in:							
	(1) Food	(2) Clothing	(3) Health	(4) Transport	(5) Tools	(6) Housewares	(7) Luxuries	(8) Any good
Week: 1=past 7 days; 0=past 8-14 days	0.070** (0.033)	0.031 (0.103)	0.020 (0.065)	0.138* (0.078)	-0.008 (0.110)	-0.112 (0.147)	0.078 (0.079)	0.057* (0.029)
Person's sex: 1=female; 0=male	-0.262*** (0.032)	-0.371*** (0.078)	-0.205*** (0.059)	-0.283*** (0.072)	-0.368* (0.192)	-0.196 (0.137)	-0.106 (0.085)	-0.271*** (0.029)
Survey year: 2004-2011	0.075*** (0.011)	-0.011 (0.040)	0.051** (0.021)	-0.031 (0.042)	0.046 (0.030)	-0.070 (0.044)	0.027 (0.031)	0.067*** (0.011)
Constant	-147.96*** (21.597)	23.725 (80.817)	-97.243** (42.695)	64.223 (83.725)	-87.550 (60.612)	142.823 (88.014)	-54.150 (62.746)	-131.510*** (21.829)
Observations	9,065	871	1,537	828	750	379	841	15,328
R-squared	0.085	0.206	0.177	0.287	0.200	0.198	0.170	0.084

Notes:

Robust standard errors in parentheses. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Regressions are ordinary least squares (OLS) and include village and year fixed effects and clustering by subjects in a year. Outcome is the natural log of the value of different expenditures. The unit of measure in the regression is the item bought; a person in one week could have spent on many goods, with each good counted independently. The sample size for column eight is larger than the sum of the first seven columns because it contains other types of expenditures, such as expenditures in school supplies, which were not included in the first seven columns. See [Table 8.7](#) for a list of the items under each type of expenditure.

Source: [Do file, anBuy_2_weeks_analysis_Part_a_data_quality_v2](#)

Table 8.11. Predictors of rounding the last digit of expenditure values reported in whole numbers during the past two weeks to multiples of five: Yearly surveys (2004-2011)

Variables:	Outcome is a binary variable if person rounded when reporting expenditure in:							
	(1) Food	(2) Clothing	(3) Health	(4) Transport	(5) Tools	(6) Housewares	(7) Luxuries	(8) Anything
Person's sex: Women=1, men=0	-0.023* (0.012)	-0.066** (0.029)	-0.009 (0.027)	0.004 (0.028)	0.018 (0.068)	-0.016 (0.067)	0.113** (0.052)	-0.018* (0.010)
Survey year: 2004-2011	0.036*** (0.004)	-0.009 (0.014)	-0.000 (0.011)	0.004 (0.014)	0.013 (0.012)	0.024 (0.022)	-0.016 (0.012)	0.036*** (0.004)
Nominal value in 100 <i>bolivianos</i>	0.235*** (0.019)	0.100*** (0.022)	0.110* (0.056)	0.034*** (0.011)	0.049*** (0.013)	0.114*** (0.041)	0.031* (0.017)	0.095*** (0.024)
Constant	-71.630*** (8.435)	19.296 (28.393)	1.127 (21.468)	-7.333 (28.106)	-25.583 (24.282)	-46.850 (43.319)	32.831 (23.242)	-71.578*** (7.788)
Observations	8,791	867	1,415	825	726	367	753	14,781
R-squared	0.097	0.161	0.106	0.257	0.133	0.188	0.134	0.065

Notes:

Regressions are OLS and include village and year fixed effects and clustering by subjects in a year. Robust standard errors are in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. Outcome variable = 1 if the value of the expenditure was rounded to multiples of five, and zero otherwise. The record or unit of observation is the expenditure; a person could have two records if they reported having bought two different goods – each transaction was evaluated for rounding. Sample sizes are slightly smaller than in Table 8.10 because 547 expenditures, equivalent to 3.57% of all expenditures, had fractional values and were excluded from this table. The sample size for column eight is larger than the sum of the sample size of the first seven columns because it contains other expenditures that are not shown in the table (e.g., school supplies). See [Table 8.7](#) for a list of items under each type of expenditure.

Source: [Do file, anBuy_2_weeks_analysis_Part_a_data_quality_v2](#)

Table 8.12. Descriptive statistics: Expenditures in the past two weeks, by year (2004-2011)

		Years								
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		2004	2005	2006	2007	2008	2009	2010	2011	Total
		Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Table 8.12A. Yearly sample - by sex and total										
Men		287	296	342	293	951	278	310	367	3,124
		(50)	(48)	(50)	(48)	(48)	(47)	(47)	(58)	(49)
Women		287	322	337	315	1,037	319	345	262	3,224
		(50)	(52)	(50)	(52)	(52)	(53)	(53)	(42)	(51)
Total		574	618	679	608	1988	597	655	629	6348
Table 8.12B1. No expenditure - total (women and men)										
Expenditure made		238	276	256	263	828	249	270	549	2,929
		(41)	(45)	(38)	(43)	(42)	(42)	(41)	(87)	(46)
No expenditure		336	342	423	345	1,160	348	385	80	3,419
		(59)	(55)	(62)	(57)	(58)	(58)	(59)	(13)	(54)
Total		574	618	679	608	1988	597	655	629	6348
Table 8.12B2. No expenditure – women										
Expenditure made		70	104	92	98	292	83	91	224	1,054
		(24)	(32)	(27)	(31)	(28)	(26)	(26)	(85)	(33)
No expenditure		217	218	245	217	745	236	254	38	2,170
		(76)	(68)	(73)	(69)	(72)	(74)	(74)	(15)	(67)
Total		287	322	337	315	1037	319	345	262	3224
Table 8.12B3. No expenditure – men										
Expenditure made		168	172	164	165	536	166	179	325	1,875
		(59)	(58)	(48)	(56)	(56)	(60)	(58)	(89)	(60)
No expenditure		119	124	178	128	415	112	131	42	1,249
		(41)	(42)	(52)	(44)	(44)	(40)	(42)	(11)	(40)
Total		287	296	342	293	951	278	310	367	3124

Table 8.12. Descriptive statistics: Expenditures in the past two weeks, by year (2004-2011) - continued

	Years								
	(1) 2004 Freq (%)	(2) 2005 Freq (%)	(3) 2006 Freq (%)	(4) 2007 Freq (%)	(5) 2008 Freq (%)	(6) 2009 Freq (%)	(7) 2010 Freq (%)	(8) 2011 Freq (%)	(9) Total Freq (%)
Table 8.12C. Mean number of expenditures by sex									
Women	3.34	3.45	3.32	3.06	3.08	4.54	3.91	8.33	4.45
Men	4.15	4.66	4.04	4.88	4.71	5.80	5.57	9.98	5.70
Both	3.91	4.20	3.78	4.21	4.13	5.38	5.01	9.31	5.25
Table 8.12D. Mean nominal value of expenditures by sex									
Women	31.51	46.27	38.88	43.02	73.02	88.14	84.70	147.40	79.86
Men	95.37	86.21	74.51	101.30	187.19	163.90	136.56	251.52	156.54
Both	76.59	71.16	61.70	79.58	146.93	138.64	119.08	209.04	128.95

Notes:

Tables 8.12C-8.12D exclude people who did not spend cash.

Source: Do file, anBuy_2_weeks_analysis_Part_b_descriptive_sample_v12

Table 8.13. Frequency and share of expenditures the past two weeks by women and men: Yearly surveys (2004-2011)

Table 8.13A. Women and men Category:	Years								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	2004	2005	2006	2007	2008	2009	2010	2011	Total
Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq
(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Food	465 (51)	680 (58)	644 (66)	690 (63)	1,869 (54)	880 (66)	818 (60)	3,019 (59)	9,065 (59)
Clothing	75 (8)	77 (7)	56 (6)	88 (8)	393 (11)	44 (3)	67 (5)	71 (1)	871 (6)
Health	132 (14)	138 (12)	83 (8)	103 (9)	285 (8)	124 (9)	128 (9)	544 (11)	1,537 (10)
Transport	24 (3)	4 (0)	20 (2)	39 (4)	171 (5)	65 (5)	128 (9)	377 (7)	828 (5)
Tools	55 (6)	100 (9)	46 (5)	44 (4)	210 (6)	52 (4)	34 (3)	209 (4)	750 (5)
Housewares	42 (5)	39 (3)	29 (3)	31 (3)	122 (4)	21 (2)	31 (2)	64 (1)	379 (2)
Luxuries	73 (8)	80 (7)	62 (6)	46 (4)	189 (5)	58 (4)	49 (4)	284 (6)	841 (5)
Restaurants	27 (3)	6 (1)	23 (2)	25 (2)	80 (2)	56 (4)	76 (6)	252 (5)	545 (4)
Addiction	19 (2)	13 (1)	9 (1)	17 (2)	40 (1)	27 (2)	16 (1)	184 (4)	325 (2)
Miscellaneous	7 (1)	28 (2)	10 (1)	15 (1)	86 (2)	9 (1)	9 (1)	125 (2)	289 (2)
Total	919	1165	982	1098	3445	1336	1356	5129	15430

Table 8.13. Frequency and share of expenditures during the past two weeks by women and men: Yearly surveys (2004-2011) – continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	2004	2005	2006	2007	2008	2009	2010	2011	Total
Table 8.13B. Women	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq
Category:	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Food	139 (57)	236 (69)	213 (69)	187 (63)	526 (58)	274 (73)	227 (62)	1,224 (65)	3,026 (64)
Clothing	28 (12)	23 (7)	24 (8)	31 (10)	139 (15)	16 (4)	36 (10)	26 (1)	323 (7)
Health	45 (19)	53 (15)	32 (10)	35 (12)	107 (12)	31 (8)	41 (11)	225 (12)	569 (12)
Transport	3 (1)		4 (1)	7 (2)	43 (5)	17 (5)	23 (6)	131 (7)	228 (5)
Tools	1 (0)	8 (2)	2 (1)	5 (2)	6 (1)	6 (2)	2 (1)	28 (1)	58 (1)
Housewares	12 (5)	13 (4)	12 (4)	11 (4)	35 (4)	7 (2)	11 (3)	22 (1)	123 (3)
Luxuries	8 (3)	5 (1)	9 (3)	7 (2)	16 (2)	9 (2)	5 (1)	94 (5)	153 (3)
Restaurants	5 (2)		4 (1)	9 (3)	17 (2)	13 (3)	16 (4)	79 (4)	143 (3)
Addiction	1 (0)		5 (2)	5 (2)	5 (1)		2 (1)	12 (1)	30 (1)
Miscellaneous	1 (0)	5 (1)	2 (1)	2 (1)	19 (2)	2 (1)	2 (1)	32 (2)	65 (1)
Total	243	343	307	299	913	375	365	1873	4718

Table 8.13. Frequency and share of expenditures during the past weeks by women and men: Yearly surveys (2004-2011) – continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	2004	2005	2006	2007	2008	2009	2010	2011	Total
Table 8.13C. Men	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq
Category:	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Food	326 (48)	444 (54)	431 (64)	503 (63)	1,343 (53)	606 (63)	591 (60)	1,795 (55)	6,039 (56)
Clothing	47 (7)	54 (7)	32 (5)	57 (7)	254 (10)	28 (3)	31 (3)	45 (1)	548 (5)
Health	87 (13)	85 (10)	51 (8)	68 (9)	178 (7)	93 (10)	87 (9)	319 (10)	968 (9)
Transport	21 (3)	4 (0)	16 (2)	32 (4)	128 (5)	48 (5)	105 (11)	246 (8)	600 (6)
Tools	54 (8)	92 (11)	44 (7)	39 (5)	204 (8)	46 (5)	32 (3)	181 (6)	692 (6)
Housewares	30 (4)	26 (3)	17 (3)	20 (3)	87 (3)	14 (1)	20 (2)	42 (1)	256 (2)
Luxuries	65 (10)	75 (9)	53 (8)	39 (5)	173 (7)	49 (5)	44 (4)	190 (6)	688 (6)
Restaurants	22 (3)	6 (1)	19 (3)	16 (2)	63 (2)	43 (4)	60 (6)	173 (5)	402 (4)
Addiction	18 (3)	13 (2)	4 (1)	12 (2)	35 (1)	27 (3)	14 (1)	172 (5)	295 (3)
Miscellaneous	6 (1)	23 (3)	8 (1)	13 (2)	67 (3)	7 (1)	7 (1)	93 (3)	224 (2)
Total	676	822	675	799	2532	961	991	3256	10712

Table 8.13. Frequency and share of expenditures during the past two weeks by women and men: Yearly surveys (2004-2011) – continued

Notes:

See [Table 8.7](#) for definition of categories. The category *Miscellaneous* includes school supplies, animals, unidentified goods, and other.

Source: Do file, [anBuy_2_weeks_analysis_Part_b_descriptive_sample_v12](#)

Table 8.14. Predictors of expenditures the past two weeks: Yearly surveys (2004-2011)

Variables:	(1) None	(2) Number	(3) Real value	(4) Food	(5) Clothing	(6) Health	(7) Transport	(8) Tools	(9) Housewares	(10) Luxuries
Survey year: 2004-2011	-0.055*** (0.005)	0.145*** (0.013)	0.146*** (0.020)	0.009 (0.007)	-0.012*** (0.002)	-0.007 (0.004)	0.004 (0.003)	-0.002 (0.003)	-0.004** (0.002)	-0.003 (0.003)
Person's sex: 1=female; 0=male	0.267*** (0.014)	-0.410*** (0.037)	-0.800*** (0.046)	0.058* (0.030)	0.047*** (0.011)	0.046*** (0.014)	-0.014* (0.008)	-0.06*** (0.009)	-0.001 (0.008)	-0.042*** (0.008)
Constant	110.185*** (9.371)	-290.032*** (26.636)	-289.296*** (40.581)	-17.893 (14.073)	24.256*** (4.542)	13.374* (7.236)	-8.525 (6.335)	3.783 (4.726)	8.988** (3.526)	6.951 (5.470)
Observations	6,348	2,929	2,929	2,929	2,929	2,929	2,929	2,929	2,929	2,929
R-squared	0.221	0.295	0.242	0.055	0.079	0.033	0.056	0.058	0.036	0.036

Notes:

Regressions are ordinary least squares (OLS) with village and year fixed effects and clustering by village. Robust standard errors are in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Outcomes for columns 2-3 are in natural logarithms; the outcome for column 3 is the natural logarithm of the inflation-adjusted value of expenditures the past two weeks. Other outcomes are binary variables for whether person did not spend (column 1) or spend cash on different types of goods, such as food, clothing, etc. (columns 4-10). For columns 4-10, the binary outcome takes the value of one if the person incurred an expenditure in the category, and zero if the person spent in another category. Samples in columns 2-10 include only subjects who had incurred an expenditure the past two weeks, as reported in the yearly surveys. Each record or row of data in a regression contains yearly information for one individual without repeats. [Table 8.7](#) lists the goods included in columns 4-10.

Source: [Do file, anBuy_2_weeks_analysis_Part_b_descriptive_sample_v12](#)

Table 8.15. Distinct goods given (G) and or received (R) in barter the past two weeks based on yearly surveys: 2002-2010

Category	Distinct goods in the category: Given (G), received (R), bought (B)	In bater, good was:			
		Given (G)		Received (R)	
		N	%	N	%
Food:					
Fats	G & R: Cooking oil and lard	2	3.08	2	1.50
Sweets	R: Candy, soda, Kool-Aid-type drink (<i>yupi</i>), ice cream G & R: Crackers (sweet and salted)	2	3.08	6	4.51
	B: popcorn, sugar cane, caramel milk (<i>dulce de leche</i>) chewing gum				
Meats	Includes an assortment of fish, wild terrestrial animals, fish, meats from domesticated animals (e.g., cow head, sun-dried salted meat, sausages, tripe, bones), and canned fish	6	9.23	17	12.78
Starches	R: Bread, wheat flour G & R: Pasta	1	1.54	3	2.26
	B: Sun-dried manioc flour				
Spices	G: Honey, coffee R: Generic spices, unrefined sugar (<i>chancaca</i>), sugar cane juice, onions G & R: Salt	3	4.62	5	3.76
	B: Garlic, tea, garlic, chocolate, pepper				
Dairy	R: Milk, cheese G & R: Eggs	1	1.54	3	2.26
Staples	G: coconuts*, sweet potatoes*, cacao*, lime*, oranges, papayillo*, manioc, oyoj oyoj*, guineos*, papayo macho*, watermelon, squash, maize, sugar cane*, pachio grande*, platanillo*	19	29.23	6	4.51
	R: Generic provisions, lucuma*, <i>viandada</i> G & R: Sugar (white, refined), rice, bananas B: Canned food, oranges, peas, mandarin, tomatoes, cucumbers, sorghum, potatoes, carrots, cabbage				
<i>Subtotal food</i>		(34)	(52.31)	(42)	(31.58)
Addiction	G: Tobacco R: Cigarettes, coca leaves, hard liquor	1	1.54	3	2.26
	B: Home fermented beverage (<i>chicha</i>), beer, alkaline substance to complement coca				
Clothing	G: Jipi japa (material to make hat) R: Shoes, blankets, sewing thread, pants, shirts, cloth to make clothing, sewing needles, zipper, bast clothing G & R: Generic clothing from the market	2	3.08	10	7.52
	B: Sandals, cotton thread				

Table 8.15. Distinct goods given (G) and or received (R) in barter the past two weeks based on yearly surveys: 2002-2010 - continued

Category	Distinct goods in the category: Given (G), received (R), bought (B)	In bater, good was:			
		Given (G)		Received (R)	
		N	%	N	%
Health and hygiene:					
Medicines	G: Quema quema and ambaibo, one commercial medicine, and generic medicines. R: 21 commercial medicines received, most of them identified by brand name	4	6.15	21	15.79
Hygiene-variable	R: Shampoo, detergent for clothes, other soap G & R: Green laundry soap	1	1.54	4	3.01
	B: Toothpaste, toilet paper				
Hygiene-durable	R: Comb (plastic) G & R: Mosquito net	1	1.54	2	1.50
	B: Tweezers, toothbrush, walker, traditional comb				
<i>Subtotal health and hygiene</i>		(6)	(9.23)	(27)	(20.30)
Transport:					
Variable	R: Gasoline, diesel	0	0	2	1.50
	B: Oil				
Durable	G: Raft R: Bicycle, tires	1	1.54	2	1.50
	B: Large and small canoe, pump for bicycle, repair part for motorcycle, repair part for bicycle				
<i>Subtotal transport</i>		(1)	(1.54)	(4)	(3.01)
Tools	G: Two types of palm to make bows R: Arrow, axe, cutlass, fishing net, net, chainsaw, hand saw, steelyard G & R: Fishhook, cartridge for weapon, fishing line, bullets	6	9.23	12	9.02
	B: adult bow and arrow, shotgun, hammer, rifle, shovel, hoe, seeder, wheelbarrow, fumigator, mill				
Housewares:					
Appliances	G: Cotton carrying shoulder bag (<i>marico</i>) R: Candles, light bulbs, hutch G & R: Woven mat	2	3.08	4	3.01
	B: Rope, mirror, container (<i>tachón</i>)				
Improvements	G: Tacuara (type of bamboo), cedar R: Wire, nails G & R: Thatch palm (<i>jatata</i>)	3	4.61	3	2.26
	B: Tin roof, other roofing				
Kitchen	G: Firewood R: Bucket, drinking glass, metal spoon, knife, cooking pot (metal and clay), metal cup, kerosene, plates	1	1.54	9	6.77
	B: Bag, grinding stone, metal collander, drinking glasses, chair, gallon container, metal tray, frying pan				
<i>Subtotal housewares</i>		(6)	(9.23)	(16)	(12.03)
School supplies	R: Notebook, pencil sharpener	0	0	2	1.50
	B: Pencil, eraser, book				

Table 8.15. Distinct goods given (G) and or received (R) in barter the past two weeks based on yearly surveys: 2002-2010 - continued

Category	Distinct goods in the category: Given (G), received (R), bought (B)	In bater, good was:			
		Given (G)		Received (R)	
		N	%	N	%
Luxuries	R: Radio, flashlight, cosmetics, jewelry, battery G & R: Flashlight battery	1	1.5 4	6	4.51
	B: Ring, necklace, watch, backpack, toys, refrigerator, gas container, cooking stove, ball, hammock, shoe polish, cassette tapes, electric generator				
Animals	G: Monkey, duck, and four wild animals R: Dog, parrot, pup, and three wild animals G & R: Pig, chicken	8	12. 31	8	6.02
	B: Rabbit				
Other	R: Cigarette lighter, ant poison, termite nest B: Identification card, miscellaneous	0	0	3	2.26
Total		65	100	133	100

Notes:

G = good only given, R = good only received, G & R = good given and received, B = good appears in the file of purchases the past two weeks (Table 8.7) but does not appear in the file of goods bartered.

Goods below the caesura in the middle column ("Distinct goods") were bought but not bartered; they are excluded from the analysis of barter, but are included in the table to show that the gamut of goods bought exceeds the gamut of goods bartered. Unless noted, all items bartered were also purchased. Goods marked with an asterisk were bartered but do not appear in the list of purchases. The category Meats is too unwieldy to break up in this way, but is disaggregated and analyzed in the text. Unbundling the category Medicines would allow one to identify the name brands of medicines given or received in swaps, unnecessary for our statistical ethnography.

Source: [Do file, anBarter_2_weeks_analysis_Part_a_data_quality_v1](#)

Table 8.16. Tests of telescoping bias measured with all and with different types of reported goods received in barter the past two weeks: Yearly surveys (2002-2010)

Variables:	(1)	(2)	(3)	(4)
	All	Food	Clothing	Health
A. Propensity to receive goods				
Week; 1=past 7 days; 0=past 8-14 days	0.088*** (0.007)	-0.008 (0.024)	0.031** (0.015)	-0.009 (0.013)
Person's sex: 1=female; 0=male	-0.039*** (0.007)	-0.048** (0.020)	0.082*** (0.014)	0.019* (0.011)
Survey year, 2002-2010	-0.015*** (0.002)	0.022*** (0.007)	-0.012** (0.005)	0.003 (0.004)
Constant	29.678*** (4.418)	-42.598*** (13.815)	23.645** (9.330)	-5.704 (7.420)
Observations	11,242	1,841	1,841	1,841
R-squared	0.065	0.097	0.087	0.049
B. Number of goods received				
Week; 1=past 7 days; 0=past 8-14 days	0.159*** (0.053)	0.234*** (0.063)	-0.129 (0.193)	-0.097 (0.155)
Person's sex: 1=female; 0=male	-0.319*** (0.054)	-0.254*** (0.064)	-0.139 (0.156)	-0.386*** (0.143)
Survey year, 2002-2010	-0.035*** (0.012)	-0.041*** (0.016)	-0.047 (0.031)	-0.011 (0.028)
Constant	72.983*** (24.559)	83.084*** (31.171)	95.752 (62.346)	24.267 (56.240)
Observations	1,841	1,364	168	97
R-squared	0.024	0.021	0.024	0.080
C. Value of goods received				
Week; 1=past 7 days; 0=past 8-14 days	-0.036 (0.035)	-0.024 (0.039)	-0.047 (0.106)	-0.170 (0.122)
Person's sex: 1=female; 0=male	-0.229*** (0.035)	-0.232*** (0.039)	-0.282*** (0.097)	-0.374*** (0.109)
Survey year, 2002-2010	0.108*** (0.007)	0.117*** (0.008)	0.097*** (0.017)	0.083*** (0.020)
Constant	-214.659*** (14.355)	-231.116*** (16.403)	-192.274*** (34.341)	-163.568*** (39.779)
Observations	3,392	2,250	318	317
R-squared	0.114	0.131	0.132	0.108

Table 8.16. Tests of telescoping bias measured with all and with different types of reported goods received in barter the past two weeks: Yearly surveys (2002-2010) -- continued

Notes:

All regressions are ordinary least squares (OLS) with robust standard errors in parentheses and clustering by subjects in a year. Regressions in section A also include village and year fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. See [Table 8.15](#) for a list of goods included in the outcomes of columns 2-4.

A. Propensity to receive goods. Outcomes took the value of one if the person received in barter a good the past fortnight, and zero otherwise. In the regressions, for any type of barter transaction I include one observation for each person in a week.

B. Number of goods received. The outcomes are the number of goods received in barter in a week. Under each column, the sample size includes people who bartered; for example, in the fourth column there are 97 observations for people who bartered items related to health (e.g., medicines) during each of the past two weeks.

C. Value of goods received. The outcome is the natural logarithm of the value of different goods received in barter. The unit of measure in the regression is the good received; a person in one week could have received many goods, with each good counted independently. The sample, 3392 of the first column, is slightly smaller than the full sample of 3399 (e.g., [Table 8.19](#), [8.21](#)) because in this table I dropped seven unidentified items

Source: [Do file, anBarter_2_weeks_analysis_Part_a_data_quality_v1](#)

Table 8.17. Predictors of rounding to multiples of five the last digit of values for whole number for goods received in barter during the past two weeks: Yearly surveys (2002-2010)

Variables	(1) All	(2) Food	(3) Clothing	(4) Health
Person's sex: Women=1, men=0	0.023 (0.022)	0.028 (0.024)	-0.039 (0.055)	-0.132** (0.061)
Survey year, 2002-2010	0.017*** (0.004)	0.023*** (0.005)	0.017* (0.010)	-0.008 (0.012)
Nominal value in 100 <i>bolivianos</i>	0.283*** (0.044)	0.294*** (0.076)	0.233*** (0.073)	0.662*** (0.171)
Constant	-34.231*** (8.831)	-45.443*** (10.090)	-33.876* (19.661)	16.103 (23.380)
Observations	3,316	2,203	314	303
R-squared	0.048	0.054	0.050	0.084

Notes:

Regressions are ordinary least squares (OLS) with robust standard errors (in parenthesis) clustered by subjects in a year. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Outcome variable = 1 if the value of the good received in barter was rounded to multiples of five, and zero otherwise. The record or unit of observation is the value of a good received in barter; a person could have two records if they reported having received two different goods – each transaction would be evaluated for rounding. Sample sizes are slightly smaller than in Table 8.16C because 76 goods received in barter (equivalent to 3.95% of all values reported for different items) had fractional values and were excluded in this table. This table is restricted to values reported in whole numbers. See Table 8.15 for a list of goods included in the outcome of the columns.

Source: [Do file, anBarter_2_weeks_analysis_Part_a_data_quality_v1](#)

Table 8.18. Descriptive statistics: Barter the past two weeks, by year (2002-2010)

	Year									
	(1) 2002 Freq (%)	(2) 2003 Freq (%)	(3) 2004 Freq (%)	(4) 2005 Freq (%)	(5) 2006 Freq (%)	(6) 2007 Freq (%)	(7) 2008 Freq (%)	(8) 2009 Freq (%)	(9) 2010 Freq (%)	(10) Total Freq (%)
Table 8.18A. Yearly sample - by sex and total										
Men	172 (51)	102 (49)	286 (50)	336 (50)	342 (50)	290 (48)	944 (48)	278 (47)	308 (47)	3,058 (49)
Women	164 (49)	107 (51)	288 (50)	342 (50)	337 (50)	313 (52)	1,029 (52)	319 (53)	343 (53)	3,242 (51)
Total	336	209	574	678	679	603	1973	597	651	6300
Table 8.18B1. No barter - total (women and men)										
Barter made	100 (30)	49 (23)	105 (18)	111 (16)	128 (19)	112 (19)	423 (21)	84 (14)	109 (17)	1,221 (19)
No barter	236 (70)	160 (77)	469 (82)	567 (84)	551 (81)	491 (81)	1,550 (79)	513 (86)	542 (83)	5,079 (81)
Total	336	209	574	678	679	603	1973	597	651	6300
Table 8.18B2. No barter – women										
Barter made	55 (34)	22 (21)	51 (18)	50 (15)	57 (17)	54 (17)	174 (17)	37 (12)	48 (14)	548 (17)
No barter	109 (66)	85 (79)	237 (82)	292 (85)	280 (83)	259 (83)	855 (83)	282 (88)	295 (86)	2,694 (83)
Total	164	107	288	342	337	313	1029	319	343	3242
Table 8.18B3. No barter – men										
Barter made	45 (26)	27 (26)	54 (19)	61 (18)	71 (21)	58 (20)	249 (26)	47 (17)	61 (20)	673 (22)
No barter	127 (74)	75 (74)	232 (81)	275 (82)	271 (79)	232 (80)	695 (74)	231 (83)	247 (80)	2,385 (78)
Total	172	102	286	336	342	290	944	278	308	3058

Table 8.18. Descriptive statistics: Barter the past two weeks, by year (2002-2010) – continued

		Years									
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
		2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
		Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Table 8.18C1. Mean number of goods bartered – total											
	Given	1.37	1.39	1.36	1.36	1.23	1.13	1.12	1.24	1.16	1.22
	Received	2.53	1.82	1.94	2.24	2.19	1.87	1.75	2.01	1.96	1.97
Table 8.18C2. Mean number of goods bartered - women											
	Given	1.31	1.41	1.35	1.24	1.19	1.07	1.10	1.30	1.19	1.20
	Received	2.18	1.82	1.76	1.82	1.82	1.54	1.62	1.89	1.67	1.75
Table 8.18C3. Mean number of goods bartered - men											
	Given	1.44	1.37	1.37	1.46	1.25	1.17	1.14	1.19	1.13	1.23
	Received	2.96	1.81	2.11	2.59	2.48	2.17	1.85	2.11	2.20	2.15
Table 8.18D. Mean nominal value of goods received											
	Women	28.66	23.89	22.84	25.42	23.92	27.39	44.48	46.27	35.42	33.82
	Men	53.28	32.56	35.72	55.60	44.08	38.22	72.95	57.36	58.76	57.04
	Total	39.74	28.66	29.47	42.00	35.10	33.00	61.24	52.48	48.48	46.62

Notes:

Tables 8.18C-8.18D exclude people who did not barter. Nominal values in section D are in *bolivianos*.

Source: [Do file, anBarter_2_weeks_analysis_Part_b_descriptive_sample_v2](#)

Table 8.19. Total frequency and share of goods given or received by women and men in barter the past two weeks: 2002-2010 (n=3399 goods)

Category:	Received Freq (%)	Given Freq (%)	Received - given difference
<i>Food:</i>			
Fats	189 (5.56)	3 (0.08)	186
Sweets	174 (5.11)	2 (0.05)	172
Meats	883 (25.97)	14 (0.41)	869
Starches	267 (7.85)	1 (0.02)	266
Spices	69 (2.03)	13 (0.38)	56
Dairy	28 (0.82)	14 (0.41)	14
Staples	641 (18.85)	2,178 (64.07)	-1537
Addiction	30 (0.88)	1 (0.02)	29
Clothing	319 (9.38)	3 (0.08)	316
<i>Health and hygiene:</i>			
Medicines	90 (2.64)	6 (0.17)	84
Hygiene – variable	223 (6.56)	2 (0.05)	221
Hygiene – durable	4 (0.11)	1 (0.02)	3
<i>Transport:</i>			
Variable	3 (0.08)		3
Durable	2 (0.05)	11 (0.32)	-9
Tools	126 (3.70)	7 (0.20)	119

Table 8.19. Total frequency and share of goods given or received by women and men in barter the past two weeks: 2002-2010 (n=3399 goods) – continued

<u>Category</u>	Received Freq (%)	Given Freq (%)	Received - Given Difference
<i>Housewares:</i>			
Appliances	8 (0.23)	71 (2.08)	-63
Improvements	5 (0.14)	998 (29.36)	-993
Kitchen	115 (3.38)	10 (0.29)	105
School supplies	7 (0.20)		7
Luxuries	196 (5.76)	2 (0.05)	194
Animals	8 (0.23)	60 (1.76)	-52
Other	7 (0.20)		7
Unidentified	5 (0.14)	2 (0.059)	3

Notes:

See [Table 8.15](#) for definition of categories

Source: Source: [Do file, anBarter_2_weeks_analysis_Part_b_descriptive_sample_v2](#)

Table 8.20. Predictors of barter the past two weeks: Yearly surveys (2002-2010)

Variables:	Goods received in barter:					
	(1) None	(2) Number	(3) Real value	(4) Food	(5) Clothing	(6) Health
Survey year, 2002-2010	0.017*** (0.005)	-0.034*** (0.011)	-0.034* (0.017)	0.019* (0.011)	-0.005 (0.004)	-0.008* (0.005)
Person's sex: 1=female; 0=male	0.055*** (0.018)	-0.137*** (0.049)	-0.405*** (0.050)	-0.004 (0.026)	0.077*** (0.017)	0.022 (0.017)
Constant	-34.056*** (10.319)	68.671*** (22.617)	72.579** (34.783)	-38.258* (21.099)	10.618 (8.453)	16.022* (9.270)
Observations	6,300	1,211	1,211	1,211	1,211	1,211
R-squared	0.071	0.145	0.173	0.009	0.021	0.006

Notes:

Regressions are ordinary least squares (OLS) with village and year fixed effects and clustering by village. Robust standard errors are in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Outcomes for columns 2-3 are in natural logarithms; the outcome for column 3 is the natural logarithm of the inflation-adjusted value of good received in barter during the past two weeks. Other outcomes are binary variables for whether a person did not barter (column 1) or received in barter food (column 4), clothing (column 5), or goods related to health and hygiene (column 6). For columns 4-6, the binary outcome takes the value of one if the person received in barter the good, and zero if the person bartered something else. Samples in columns 2-6 include only people who had bartered the past two weeks. Each record or row of data in a regression contains yearly information for one individual without repeats. [Table 8.15](#) lists the goods included in columns 4-6.

Source: Source: [Do file, anBarter_2_weeks_analysis_Part_b_descriptive_sample_v2](#)

Table 8.21. Predictors of bartering meats, sugar, thatch palm, rice, and plantains the past two weeks (N=3999): Yearly surveys (2002-2010)

Variables:	Received (1-2)		Given (3-5)		
	(1) Meats	(2) Sugar	(3) Thatch	(4) Rice	(5) Plantains
Survey year, 2002-2010	0.003 (0.010)	0.006 (0.004)	-0.006 (0.005)	-0.014* (0.008)	0.018*** (0.007)
Person's sex: 1=female; 0=male	-0.039*** (0.014)	0.011 (0.011)	-0.012 (0.013)	-0.045* (0.026)	0.027*** (0.010)
Constant	-5.887 (19.337)	-12.324 (8.968)	12.902 (10.340)	28.505* (16.225)	-35.732** (13.579)
R-squared	0.103	0.024	0.671	0.258	0.238

Notes:

Regressions are ordinary least squares (OLS) with village and year fixed effects and clustering by village. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.10.

Outcomes are binary variables for whether person received meats or sugar (columns 1-2) or gave thatch palm, rice, or plantains (columns 3-5) in barter. The outcome takes the value of one if the person received or gave the item, and zero if the person bartered something else. Each record or row of data captures a swap; a person could have multiple rows if they bartered several goods.

Table 8.15 lists the goods included under meat (column 1). Sugar refers to white, refined sugar.

Source: Source: [Do file, anBarter_2_weeks_analysis_Part_b_descriptive_sample_v2](#)

Table 8.22. Probability of bartering meats, sugar, thatch palm, rice, and plantains the past two weeks: Quarterly surveys 2002-2003

Variable:	Part A: All adults (obs=7,124)					Part B: Adults who bartered (obs=2,384)				
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Received (1-2):		Given (3-5):			Received (6-7):		Given (8-10):		
	Meats	Sugar	Thatch	Rice	Plantains	Meats	Sugar	Thatch	Rice	Plantains
Season: Dry=1, rainy=0	-0.006 (0.007)	0.011** (0.004)	0.036*** (0.012)	0.013 (0.010)	0.002 (0.008)	-0.058*** (0.021)	0.013 (0.012)	0.052* (0.030)	-0.006 (0.029)	-0.033 (0.024)
Person's sex: 1=female; 0=male	-0.028*** (0.007)	-0.008 (0.005)	-0.040** (0.018)	-0.063*** (0.011)	0.004 (0.010)	-0.017 (0.022)	0.013 (0.013)	-0.021 (0.046)	-0.111*** (0.032)	0.077** (0.031)
Constant	0.097*** (0.007)	0.040*** (0.004)	0.117*** (0.014)	0.120*** (0.011)	0.070*** (0.009)	0.284*** (0.020)	0.116*** (0.011)	0.336*** (0.035)	0.342*** (0.031)	0.210*** (0.025)
R-squared	0.003	0.001	0.007	0.012	0.000	0.005	0.001	0.003	0.014	0.010

Notes:

Regressions are ordinary least squares (OLS) with clustering by subjects in a year and robust standard errors, shown in parenthesis. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. Outcomes are binary variables for whether the person received meats or sugar (columns 1-2, 6-7) or gave thatch palm, rice, or plantains (columns 3-5, 8-10) in barter. The outcome takes the value of one if the person received or gave the item, and zero if the person did not barter (columns 1-5) or bartered something else (columns 6-10). Each record or row of data captures a swap; a person could have multiple rows if they bartered several goods. Dry season = May-October; rainy season = November-April. [Table 8.15](#) lists the goods included in the outcomes.

Source: Source: [Do file, anBarter_2_weeks_analysis_Part_c_QUARTERLY_2002-2003_v1](#)

Table 8.23. Yearly indicators of market exposure for total sample of adults, women, and men (2004-2010) with data from the fortnight before the interview

	Year							
	(1) 2004 Freq (%)	(2) 2005 Freq (%)	(3) 2006 Freq (%)	(4) 2007 Freq (%)	(5) 2008 Freq (%)	(6) 2009 Freq (%)	(7) 2010 Freq (%)	(8) Total Freq (%)
Table 8.23A. Total								
Autarky: no cash and no barter	128 (22)	136 (22)	182 (27)	143 (24)	583 (30)	172 (29)	187 (29)	1,531 (27)
B: Barter, no cash	43 (8)	34 (6)	56 (8)	51 (8)	114 (6)	38 (6)	50 (8)	386 (7)
C: Cash and barter	124 (22)	151 (24)	166 (24)	109 (18)	369 (19)	97 (16)	112 (17)	1,128 (20)
Market: Cash only	278 (49)	297 (48)	275 (41)	300 (50)	878 (45)	282 (48)	297 (46)	2,607 (46)
Total	573	618	679	603	1944	589	646	5652
Table 8.23B. Women								
Autarky: no cash and no barter	104 (36)	113 (35)	132 (39)	101 (32)	430 (43)	141 (45)	148 (43)	1,169 (40)
B: Barter, no cash	31 (11)	22 (7)	35 (10)	32 (10)	64 (6)	23 (7)	29 (9)	236 (8)
C: Cash and barter	48 (17)	66 (21)	74 (22)	47 (15)	133 (13)	37 (12)	37 (11)	442 (15)
Market: Cash only	104 (36)	120 (37)	96 (28)	133 (42)	384 (38)	114 (36)	127 (37)	1,078 (37)
Total	287	321	337	313	1011	315	341	2925
Table 8.23C. Men								
Autarky: no cash and no barter	24 (8)	23 (8)	50 (15)	42 (14)	153 (16)	31 (11)	39 (13)	362 (13)
B: Barter, no cash	12 (4)	12 (4)	21 (6)	19 (7)	50 (5)	15 (5)	21 (7)	150 (6)
C: Cash and barter	76 (27)	85 (29)	92 (27)	62 (21)	236 (25)	60 (22)	75 (25)	686 (25)
Market: Cash only	174 (61)	177 (60)	179 (52)	167 (58)	494 (53)	168 (61)	170 (56)	1,529 (56)
Total	286	297	342	290	933	274	305	2727

Notes

Cash = person spent money or earned it. Figures 8.17A-8.17C draw on the percentages from this table.

Source: [Do file, anDeficit_2_weeks_analysis_Part_a_descriptive_sample_v2](#)

Table 8.24. Daily real value in *bolivianos* per adult of [i] cash income from sale and wage earnings and [ii] consumption (barter and purchases) by sex and for the total, based on yearly surveys (2004-2010)

Group	Variable:	N	Mean	Median	SD
Men	Cash income	2365	25	13	44
	Consumption-total, of which:	2365	12	5	26
	Barter	2365	2	0	6
	Purchases	2365	10	3	25
Women	Cash income	1756	9	3	25
	Consumption-total, of which:	1756	4	2	11
	Barter	1756	1	0	4
	Purchases	1756	3	1	10
Total	Cash income	4121	18	7	38
	Consumption-total, of which:	4121	9	3	21
	Barter	4121	2	0	5
	Purchases	4121	7	2	20

Notes

Table excludes people in autarky.

Source: [Do file, anDeficit_2_weeks_analysis_Part_a_descriptive_sample_v2](#)

Table 8.25. The contribution of barter to total consumption among adults who purchased and bartered for goods. Daily real values per adult by sex and for the total, based on yearly surveys (2004-2010)

Group	Variable	N	Mean	Median	SD
Men	Total consumption of which:	513	18	10	24
	Barter	513	6	3	10
	Purchases	513	12	6	21
	Barter as % of total consumption	513	38%	33%	
Women	Total consumption of which:	298	8	5	10
	Barter	298	3	2	3
	Purchases	298	5	2	9
	Barter as % of total consumption	298	46%	45%	
Total	Total consumption of which:	811	14	8	21
	Barter	811	5	3	8
	Purchases	811	10	4	18
	Barter as % of total consumption	811	41%	37%	

Notes

Table includes only people in bin C of previous tables, but, in addition, excludes individuals in this bin who earned cash but did not spend cash.

Source: [Do file, anDeficit_2_weeks_analysis_Part_a_descriptive_sample_v2](#)

Table. 8.26. Predictors of having a surplus (savers) or a deficit (dissavers) of cash income over expenditures (purchases + barter) the past two weeks among Tsimane' adults: Yearly surveys 2004-2010

Variable:	Savers (Surplus) (income>expenditures [consumption])			Dissavers (Deficit) (income<expenditures [consumption])		
	(1) Total	(2) Women	(3) Men	(4) Total	(5) Women	(6) Men
Survey year, 2004-2010	0.091*** (0.020)	0.124*** (0.028)	0.070*** (0.025)	0.053** (0.025)	0.050* (0.030)	0.057* (0.032)
Person's sex: Women=1, men=0	-0.970*** (0.058)			-0.761*** (0.062)		
Constant	-179.751*** (40.979)	247.000*** (57.010)	-138.668*** (50.299)	-103.744** (49.819)	-99.555* (59.658)	112.675* (63.912)
Observations	2,492	964	1,528	1,613	781	832
R-squared	0.228	0.223	0.120	0.247	0.226	0.202

Notes:

Regressions are ordinary least squares (OLS) with village and year fixed effects and clustering by village each year. Robust standard errors are in parenthesis. *** p<0.01, ** p<0.05, * p<0.10. The outcome is daily real cash income minus daily real expenditures (purchases plus the value of goods received in barter) for an adult during each yearly survey. For the regressions, the outcome is expressed in natural logarithms of the income-expenditure difference of raw values for columns 1-3 and in natural logarithm of the absolute value of the income-expenditure difference for columns 4-6. People for whom income equaled expenditure (n=1,547) are excluded.

Source: [Do file, anBarter_2_weeks_analysis_Part_b_descriptive_sample_v2](#)

Table 8.27. Measures of mean daily cash income and consumption among Tsimane', based on yearly longitudinal study, 2004-2010 (TAPS + baseline of RCT)

Outcome is mean for:	N	Currency	Outcome:			
			Income	Consumption:		
			Earnings	Expenditures	Barter	Total
A						
All women	2525	Real bolivianos/a/	5.29	1.94	0.75	2.65
All men	2727		21.29	8.61	1.70	10.30
B						
Women, values>0/b/	1756		8.82	3.23	1.26	4.49
Men, values>0	2365		24.55	9.93	1.92	11.90
C						
All households/c/			11	4	1	5
Household, values>0			29	12	2	14
D/d/						
Per person, values of all adults			5.27	2.13	0.50	2.63
Per person, values>0		6.92	2.64	0.61	3.25	
E/e/		Real USA dollars				
Per person, values of all adults			0.58	0.23	0.05	0.29
Per person, values>0			0.76	0.29	0.07	0.36
F/f/		Purchasing Power Parity (PPP)				
Per person, values of all adults			1.09	0.44	0.10	0.55
Per person, values>0			1.44	0.55	0.13	0.68

Notes:

/a/ Bolivia's CPI (base 2010) used to convert nominal to real prices. CPI retrieved from World Bank on **March 3, 2019** from: <https://data.worldbank.org/indicator/FP.CPI.TOTL?locations=BO>.

/b/ Values>0 means computation includes only adults who reported positive values for earnings, expenditures, or barter.

/c/ Median household size during 2004-2010: adult women (1.25), adult men (1.17), children age<16 years (3.43). Median totals per household: adults 2.42; children 3.43, total 5.85. To arrive at the values for section C, I multiplied values for women from section B by 1.25 women per household and values for men from section B by 1.17 men per household. Median values for household size and composition come from **Chapter 5**, Table 5.4.

/d/ Values from section C divided by median total household size (5.83 people).

/e/ Yearly exchange rate 2004-2010 computed from daily exchange rate of Bolivia's Central Bank^{xxi}.

/f/ Conversion factors to estimate PPP came from the World Bank and use 1.90 for 2011 prices. I multiplied values from section E to arrive at the values of section F. Data downloaded on October 25, 2019 from:

<https://www.worldbank.org/en/topic/poverty/brief/global-poverty-line-faq>

Source: Excel file "Table8_27_long_hand_computation_of_poverty. In, Chapter 8→Drafts→Outreg2_files→Deficits→Table_8_27_long-hand-computation-poverty

Appendix A
Cash expenditures in foods and restaurants for the past fortnight

In this appendix I show the yearly frequency of expenditures incurred hereunder in restaurant meals and different categories of foods during the past fortnight. **Table 8.7** lists the items under each food type.

	Years								
	(1) 2004 Freq (%)	(2) 2005 Freq (%)	(3) 2006 Freq (%)	(4) 2007 Freq (%)	(5) 2008 Freq (%)	(6) 2009 Freq (%)	(7) 2010 Freq (%)	(8) 2011 Freq (%)	(9) Total Freq (%)
Table A.8.1. Women and men									
Category:									
Fats	29 (6)	49 (7)	37 (6)	49 (7)	188 (10)	104 (11)	97 (11)	355 (11)	908 (9)
Sweets	62 (13)	81 (12)	67 (10)	93 (13)	226 (12)	110 (12)	102 (11)	648 (20)	1,389 (14)
Meats	58 (12)	71 (10)	121 (18)	90 (13)	293 (15)	122 (13)	113 (13)	369 (11)	1,237 (13)
Starches	146 (30)	199 (29)	173 (26)	181 (25)	442 (23)	240 (26)	216 (24)	722 (22)	2,319 (24)
Spices	36 (7)	61 (9)	66 (10)	85 (12)	174 (9)	88 (9)	57 (6)	376 (11)	943 (10)
Dairy	2 (0)	4 (1)		5 (1)	6 (0)	5 (1)	3 (0)	19 (1)	44 (0)
Restaurants	27 (5)	6 (1)	23 (3)	25 (3)	80 (4)	56 (6)	76 (9)	252 (8)	545 (6)
Staples	132 (27)	215 (31)	180 (27)	187 (26)	540 (28)	211 (23)	230 (26)	530 (16)	2,225 (23)
Total	492	686	667	715	1949	936	894	3271	9610

	Years								
	(1) 2004 Freq Category: (%)	(2) 2005 Freq (%)	(3) 2006 Freq (%)	(4) 2007 Freq (%)	(5) 2008 Freq (%)	(6) 2009 Freq (%)	(7) 2010 Freq (%)	(8) 2011 Freq (%)	(9) Total Freq (%)
Fats	5 (3)	22 (9)	10 (5)	17 (9)	42 (8)	31 (11)	27 (11)	153 (12)	307 (10)
Sweets	21 (15)	27 (11)	34 (16)	28 (14)	84 (15)	39 (14)	32 (13)	235 (18)	500 (16)
Meats	17 (12)	21 (9)	33 (15)	18 (9)	63 (12)	35 (12)	29 (12)	149 (11)	365 (12)
Starches	48 (33)	70 (30)	51 (24)	54 (28)	128 (24)	72 (25)	60 (25)	290 (22)	773 (24)
Spices	9 (6)	21 (9)	20 (9)	19 (10)	46 (8)	34 (12)	15 (6)	156 (12)	320 (10)
Dairy		1 (0)		1 (1)	4 (1)	3 (1)	3 (1)	6 (0)	18 (1)
Restaurants	5 (3)		4 (2)	9 (5)	17 (3)	13 (5)	16 (7)	79 (6)	143 (5)
Staples	39 (27)	74 (31)	65 (30)	50 (26)	159 (29)	60 (21)	61 (25)	235 (18)	743 (23)
Total	144	236	217	196	543	287	243	1303	3169

Table A.8.3. Men Category:	Years								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	2004	2005	2006	2007	2008	2009	2010	2011	Total
Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Fats	24	27	27	32	146	73	70	202	601
	(7)	(6)	(6)	(6)	(10)	(11)	(11)	(10)	(9)
Sweets	41	54	33	65	142	71	70	413	889
	(12)	(12)	(7)	(13)	(10)	(11)	(11)	(21)	(14)
Meats	41	50	88	72	230	87	84	220	872
	(12)	(11)	(20)	(14)	(16)	(13)	(13)	(11)	(14)
Starches	98	129	122	127	314	168	156	432	1,546
	(28)	(29)	(27)	(24)	(22)	(26)	(24)	(22)	(24)
Spices	27	40	46	66	128	54	42	220	623
	(8)	(9)	(10)	(13)	(9)	(8)	(6)	(11)	(10)
Dairy	2	3		4	2	2		13	26
	(1)	(1)		(1)	(0)	(0)		(1)	(0)
Restaurants	22	6	19	16	63	43	60	173	402
	(6)	(1)	(4)	(3)	(4)	(7)	(9)	(9)	(6)
Staples	93	141	115	137	381	151	169	295	1,482
	(27)	(31)	(26)	(26)	(27)	(23)	(26)	(15)	(23)
Total	348	450	450	519	1406	649	651	1968	6441

Source for all tables of Appendix A: Do file, anBuy_2_weeks_analysis_Part_b_descriptive_sample_v12

Appendix B (Table B.1)
Growth rates in the likelihood of adults being autarkic, yearly data (2004-2010)

Variable:	Outcome variable is:					
	Autarkic (1-3)			No cash (4-6)		
	(1) Total	(2) Women	(3) Men	(4) Total	(5) Women	(6) Men
Year	0.012*** (0.004)	0.015*** (0.006)	0.007* (0.004)	0.012*** (0.003)	0.011* (0.006)	0.010** (0.005)
Constant	-24.650*** (7.249)	-30.55*** (11.588)	-13.346* (7.901)	-23.706*** (6.764)	-22.058* (11.301)	-19.906** (9.734)
Observations	5,652	2,925	2,727	5,652	2,925	2,727
R-squared	0.075	0.119	0.093	0.131	0.179	0.158

Note:

Regressions are ordinary least squares (OLS) with robust standard errors and clustering by village each year. Standard errors are in parentheses. Besides a continuous variable for year, the regressions include village fixed effects. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$. The data includes one record per person for each year. The outcome variables are binary. Autarkic = 1 if person did not barter or engage in cash transactions, and Autarkic = 0 if the person bartered, spent cash, or received cash. No cash = 1 if adult did not barter, or only bartered, but did not receive or spend cash; No cash = 0 if adult received cash or spent cash.

Source: do file, [anDeficit_2_weeks_analysis_Part_a_descriptive_sample_v2](#)

Appendix C
Guide to tables and figures for Chapter 8

The Excel figures for this chapter draw on tables from this chapter. Since the Excel figures indicate the table from which they came, they do not need a reference to a do file. I only link figures and tables to a do file if do files directly produced the figures and tables.

<i>Name of do file</i>	<i>Figures</i>	<i>Tables</i>
anDurable_yearly_analysis_Part_a_data_quality_v4	8.1	8.2-8.3
anDurable_yearly_analysis_Part_b_descriptive_sample_v11		8.4-8.6
anBuy_2_weeks_analysis_Part_a_data_quality_v2	8.4	8.7-8.11
anBuy_2_weeks_analysis_Part_b_descriptive_sample_v12	8.8A-8.8B	8.12-8.14, A.8.1-A.8.3
anBarter_2_weeks_analysis_Part_a_data_quality_v1	8.9	8.15-8.17
anBarter_2_weeks_analysis_Part_b_descriptive_sample_v2	8.10A-8.10B, 8.11-8.12	8.18-8.21
anBarter_2_weeks_analysis_Part_b_descriptive_sample_HH_2000_02_v1	8.13A-8.13B, 8.14A-8.14B, 8.15A-8.15B, 8.16	
anDeficit_2_weeks_analysis_Part_a_descriptive_sample_v2	8.17A-8.17C 8.18A-8.18B 8.19A-8.19B, 8.20-8.21	8.23-8.26, B.1
anBarter_2_weeks_analysis_Part_c_QUARTERLY_2002-2003_v1		8.22

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- Sahlins, M. (1972). *Stone age economics*. New York: Aldine de Gruyter.
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ⁱ Appendix C lists the do files that produced each table and graph.

ⁱⁱ I dropped the following items: (a) foods (n=50; 0.28%), (b) medicines (n=23; 0.13%), (c) fares and fuel (n=14; 0.08%), and (d) goods surveyors could not identify (n=104; 0.58%). **Do file:** [crData_Construction_Buy_Durables_Part_1_V22](#).

ⁱⁱⁱ Besides flashlight batteries, I can think of only two other capital ambiguities in classification. I could have put blankets under home improvements but I put them under clothing. Among part-time foragers, a metal device to smooth wrinkles in apparel (an iron) could be viewed as a luxury, a complement of clothing, or home improvement. I classified irons as clothing. I doubt my classification spoils the analysis because the three goods accounted for a small share of all purchases (n=16,123): flashlight batteries (0.11%), blankets (6.98%), irons (0.01%).

^{iv} During the study the domestic currency exchange rate averaged 7 *bolivianos*/USA dollar. See [Appendix C, Chapter 7](#).

^v I doubt it. As part of the randomized controlled trial on savings we did a baseline survey (2011), which showed 307 of 533 men (58%) and 401 of 585 women (69%) had no cash at home at the time of the interview. The average woman had 41 *bolivianos* in cash (SD=125), the average man 140 (SD=1016). Men were more likely to save, and saved more. Things could have differed during 2002-2010 when our longitudinal study took place. Doubt it. Thanks to Diego Santa María, Global Poverty Research Lab, Northwestern University, for providing me with the statistics on savings from the randomized-controlled trial.

^{vi} We found 102 such goods; they accounted for 0.66% of all expenditures. Some items we could not identify with precision but we could place them in a category because of their code number. For instance, in our coding systems terrestrial animals were coded with numbers from 1 to 99. With our scheme, an animal without a name coded as 75 could be placed in the animal

category. If a code used fell outside the official range of codes used for plants, fish, terrestrial animals, or commercial items, I dropped the observation. This is what happened to the 102 excluded goods.

^{vii} Another example: I grouped eggs with two dairy products, milk and cheese, because the three sources of animal protein, together, accounted for only 44 of purchases across all the years of the study.

^{viii} In the Access files with the raw data for this book, one can find the code numbers for animals, plants, or commercial items. With animals, we followed the convention of reserving a range of code values for fish or for terrestrial animals. We assigned code numbers 1-99 to terrestrial animals and 100-200 to fish. Most times, a code number had the name of the animals in Tsimane' and in Spanish, making easy the assignment of the item to the animal category (or to another category), but when the name of an item was missing, one could use the code number to assign the item to the category of fish or terrestrial animal.

^{ix} The figures for women and men come from dividing 14 days by 4.45 (women) or 5.70 (men) (Table 8.12C).

^x In the do file [anBuy_2_weeks_analysis_Part_b_descriptive_sample_v12](#) one can find the frequency of items under each food type shown in Figures 8.8A-8.8B and Tables B.1A-B.1C. Search for "Frequency and % tabulation of food items for Figures 8.8A-8.8B".

^{xi} From Byron's "Childe Harold's Pilgrimage", Canto IV, verse 178.

^{xii} Although we collected information on swaps as early as 1999, I exclude the information because the sample was small (1999) or because, as in 2000 and 2001, the information referred to households. Both shortcomings would have made it hard to estimate and trust trends.

^{xiii} In the surveys of 2002 and 2003, June accounted for 20.12% and 17.22% of observations.

^{xiv} A t-test comparing the mean difference between the value of goods given (mean = 77.36 *bolivianos*; SD = 88.84) and the value of goods received in swaps (mean = 73.87 *bolivianos*; SD = 87.76) produced a p value of 0.001. We can trust the trivial difference in value of 3.48 *bolivianos*.

^{xv} For the 66 households that were net lenders, the mean and median deficit (value given minus value received) were 12.48 and 8.50 *bolivianos*. The mean value of all goods given in barter for these households was 78.08 *bolivianos*; as a share of the total value of goods given, 12.48 *bolivianos* represents 15.38%.

^{xvi} I deliberately extend the meaning of the word autarkist beyond its technical definition of an advocate of autarky to a person practicing it.

^{xvii} I know my measures of income and consumption do not adjust for Purchasing Power Parity (PPP), but the omission is forgivable as I am not comparing Tsimane' with others, in Bolivia or

beyond. There is already enough measurement noise with the data that adding another layer of complexity would sink even further our admittedly fragile empirics. Nevertheless, in the conclusion, I provide measures of income and consumption using PPP.

^{xviii} Growth rates come from an Ordinary Least Squares regressions of log income or consumption against a year variable, the person's sex, and a full suite of binary variables for villages, with robust standard errors clustered yearly in a village. The approach produced a yearly growth rate in consumption and income of 5.5% ($p=0.001$) and 3.2% ($p = 0.14$). When we add a full set of binary variables for years, the growth rate of consumption did not change much (5.1%; $p=0.002$), but the growth rate of income rose to 5.7% ($p = 0.05$).

^{xix} The clean longitudinal dataset in Stata for public use (TAPS_2002-2010_July_13_2016) shows that during 2007-2010 men over 16 years of age said they had travel to towns an average of 23.8 days/year ($n = 1,178$; $SD = 22.1$), women 17.6 days/year ($n = 1,256$; $SD = 18.2$). The Stata code was: `ttest idtravelsbY if idage_becky>=16 & year>=2007, by(idmaleY)`.

^{xx} I created a self-contained do file for this calculation that relies on the actual household size at the time of the survey. The [do file, anPoverty_2010_TAPS](#) can be found in `Chapter_8_buy_barter_DoFiles_Analysis_Deficit`

^{xxi} We downloaded information during November 2018 from the following website:
[\](http://www.bcb.gob.bo/tiposDeCambioHistorico/index.php)