

WEALTH

DRAFT

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Chapter 9

Wealth

Summary: *Aims:* 1/ Identify goods to characterize the private material wealth of Tsimane' adults, 2/ estimate the quantity and value of assets owned, 3/ compute inequality measures for all assets and for different asset bundles and sexes, and 4/ estimate yearly trends in wealth and wealth inequality. *Methods:* Data on quantities came from answers by adults about asset they owned. Price data came from expenditure and community price surveys. Median yearly prices adjusted by Bolivia's Consumer Price Index were used to compute values but wealth was not adjusted by liabilities. Gini coefficients were used to compute inequality. *Data:* Yearly surveys (2002-10) were used to a/ measure the quantity of assets owned and b/ asset prices. The 22 main assets included 13 commercial goods (e.g., axes), 5 local goods (e.g., canoes), and 4 livestock. *Findings:* 1/ *Poverty.* Tsimane' are asset poor. 30% did not own footwear, half did not own hens. When they owned an asset, they owned one. The yearly value of assets reached \$612/adult. ~77% of asset wealth was stored in livestock, 15% in commercial goods, 7% in local articles. 2/ *Inequality.* Ginis varied by individual assets, asset bundles, and sex. The Gini of quantities went from a low of 0.36 (bed nets) to over 0.90 for most livestock. The overall Gini of the monetary value of all assets, for all years and both sexes combined was 0.34. Ginis varied widely: commercial goods (0.60), local articles (0.53), and livestock (0.33). 3/ *Trends.* Tsimane' are becoming asset richer. During 2002-2010, the chances of owning 8 assets grew, the chances declined for 3 assets, and stayed flat for the rest. While becoming asset rich Tsimane' have reined in general growth of inequality. 7 asset saw shrinking Ginis, 6 saw growing Ginis, and the rest saw no change. The Gini of commercial or local assets did not change, but the Gini of livestock grew. 4/ *Sex.* The yearly value of assets owned by women (\$394) was lower than men's (\$1152). Inequality contrasts between the sexes yielded unclear results. The Gini of all assets and livestock was slightly larger for men (all = 0.18; livestock = 0.17) than women (all = 0.15; livestock = 0.14), the Gini of commercial goods was larger for women (0.57) than men (0.42); the Gini of local goods was much higher for men (0.60; women=0.40). Since Ginis varied by asset type and sex, the Gini chosen could lead one to say Tsimane' was a society with either very little or much inequality. Tsimane' resemble the most asset-equal industrial nation (Italy), but the conclusion is flawed as wealth definitions vary cross culturally. Until there is a common definition of wealth, cross-cultural conclusions about wealth inequality will remain suspect.

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The material culture of a people tells us how they live, show status peacockery, and the earthy things they need to carry on every day. The compend exhibits a society. Some physical assets hoist the downtrodden from poverty. Chicken ownership brings in cash *saecula saeculorum* from the sale of eggs; owning a bow and an arrow puts animal proteins on the table. Assets owned also say something about the group. They can point to the rung in the ladder of cultural evolution where the group stands. With passion, anthropologists have documented the material culture of the ur-indigenous before the latter vanish. Who controls assets is an inlet into colloquies about inequality. Assets in the hands of a few most find appalling for such a distribution offends humans' sense of fairness and because the skewed distribution of assets, like the skewed distribution of income, presumably macerates social bonds and hurts individuals. Assets mean different things to academic disciplines. To economists, assets are a wicket out of poverty. To anthropologist, assets in Brigadoon embody simplicity, beauty, skills, and adaptive knowledge. To ethno-historians and archaeologists, artifacts tell about migration and cultural contact. To most, asset inequality is a gauge of social cohesion.

I address none of this here, opting for something far simpler. I turn my attention to 22 physical assets which Tsimane' have owned in historical memory. The bundle covers livestock, modern and traditional utilitarian wares, and frills from the market. To set the stage, I tally and describe the share of Tsimane' owning each asset and the quantity of each asset owned. Then I describe asset inequality, offering two novel slants: I compute time trends in asset inequality and separate measures of inequality for each sex.

Most of what we know about asset ownership and asset inequality in small-scale, remote rural societies, which is not much, comes from snapshots – almost nothing is known about trends. We know asset inequality changes from changes in income, the economy, policy, and natural disasters. Recent years have seen claims about a noticeable rise in economic inequality around the world (Piketty, 2014). Do we also see inequality growing in shuttered societies as the adventitious, elephantine market economy envelops them, or does the scabbard of intimacy, gift-giving, and sharing suffusing these unfurnished societies stanch the economic inequality presumably blanketing much of the world?

The second novel feature of the chapter is the construction of separate measures of inequality for each sex. Asset inequality could vary by the comparison group and by asset type. If, when assessing how well-off people are, they compare themselves against close neighbors, and then only among neighbors of the same sex or ethnicity or whatever else, if so, then people will care about the inequality of some assets, of some people, of some places. Measures of asset inequality for the community, province, region, or for the nation will miss the mark if, in their mind, people compare themselves to selected others. I take a stab at the topic by assessing if women and men differed in asset inequality. I go for minute detail. Do women have more inequality than men in the poultry they own? Assume women and men compare themselves not against any other person but against people of their same sex? If so – and we do not know if this is so – then it would be sex-specific asset inequality that might harm, if harm it does. Overall measures would be too hackneyed to assess how asset inequality harms individuals. One could extend this approach to other groups – by age cohorts, by ethnicity, and the like – but not in this chapter, not in this book. If one cannot see differences in asset inequality between smaller groups, then inequality for the whole will suffice, but before scrapping a microscopic approach to inequality we need to find out if you can see differences in asset inequality between groups inside society.

As in the much of this book, I eventually want to learn if inequality changes over time, perhaps from market exposure. The market gets blamed for many things these days, and growing asset inequality in non-industrial societies might be added to the list, but let's wait to see what we find.

For the chapter I use three datasets with information on assets owned by adults (Table 9.1). The datasets have information on assets owned by the household, but I leave that information aside because I want to compare individual private ownership between women and men. Other reasons for sidestepping household assets have to do with noise and definitions. Measures of assets owned by a household have more flaws than measures of assets owned by individuals because ciphers for the household came from the wife or husband answering on behalf of all. No way one respondent can know well all the belonging of others. Furthermore, skipping households allows me to avoid the vexing question of who belongs in a household. With porous boundaries, frequent cross-overs, and with families nested in multi-generational and multi-family compounds, Tsimane' households display an astonishing variety of forms, as Table 5.5 in Chapter 5 shows. The diversity would encumber anyone from coming up with a practicable definition of household to study wealth.

Insert Table 9.1

As always, data comes from the yearly longitudinal study during 2002-2010 in 13 villages (Tsimane' Amazonian Panel Study, TAPS), and from the baseline of two randomized-controlled trials (RCTs), one in which we changed the income distribution of villages selected at random (RCT-I; 2008) and one in which we gave saving boxes to household heads, also picked at random (RCT-S; 2011). We did the longitudinal study and RCT-I in different villages. The sample of villages for the randomized-controlled trial of saving was larger than the sample of villages from the two previous studies, but included some of the villages surveyed in earlier studies.

On purpose I move *scriptorium* slow, staying close to a description of the quantities of assets owned and to measures of inequality in the quantity of an asset owned. I want to see inequality, asset by asset, for all adults in the sample, and for each sex separately. My stress on quantity comes from the obvious point that people see things, not values. If harm comes from inequality, it comes from the tangible. Haptic villagers see and feel disparities in the number of canoes or hens owned by others. Most villagers probably don't know the price of a canoe, a mortar, bows and arrows, for many of these assets they craft for their own use and seldom sell or buy. Inequality is there, in the physical good, independent of the price. What we do not know is if inequality in the specific asset is large or small, if it is the same for women and men, or if it changes. We want to dissever *supra* inequality and go, tediously, asset inequality by asset inequality, before coming back to an overall measure of inequality based on the sum of the monetary value of all 22 assets owned by each person.

I also reckon asset values and trends in the inequality of asset values, but, given how tough it is to come up with prices in economies with unformed markets we do better by sticking close to quantities, unless we want to meld a person's total assets, a task for which prices come in handy. I rely on a morass of assumptions to attach the right price to an asset, and, based on monetary values, I compute a yearly measure of inequality for all assets and for different bundles, but on purpose I put those findings in the backdrop.

The ownership of physical assets among Tsimane'

Tsimane' have taken in the material culture of Westerners for a long time. In his travels through the lands of Mosestén and Tsimane' during 1873, Armentia (1905, p. 123) found many stone axes strewn about because "missionaries had given them all sorts of iron tools"ⁱ.

The earliest written record about the material culture of Tsimane' come as *obiter dicta* of the Swedish anthropologist Erland Nordenskiöld, whom we introduced in [Chapter 3](#). During 1904-1905, 1908-1909, and 1913-1914 he travelled through northeast Bolivia and adjoining places in Peru and Brazil getting to "know [Tsimane'] pretty intimately" (Nordenskiöld, 1979 [orig. 1924], pp. 2-3). He compared the cultivars of ten traditional indigenous societies in the lowlands and found "the small isolated tribe" of Tsimane' (ibid., p. 128) practiced "agriculture extensively" (Nordenskiöld, 1999 [orig. 1926], p. 107), ranking at the top of the other societies he saw in the range of crops grown (Nordenskiöld, 1979 [orig. 1924], pp. 34-35). Households had scattered fields full of native and foreign cultivars (Nordenskiöld, 2001 [orig 1924], p. 159). The overflow from the august harvest kept alive the indolent Whites living like parasites in towns and the cadging ones exploiting the yokel upriver (Nordenskiöld, 2001 [orig 1924], p. 158).

Although the "little tribe" farmed with verve and displayed unexampled horticultural skills, they were not sedentary nor did they relocate much (Nordenskiöld, 1999 [orig. 1926], pp. 107, 175). The adoption of metal tools allowed Tsimane' to enlarge their fields while leashing them to the land (Nordenskiöld, 2003 [orig. 1922], p. 155). Reliance on horticulture and correlative sedentariness partially shaped their material culture. Along with Yuracaré, Tsimane' were the only society Nordenskiöld saw to have "compactly built conical huts in which the fowls are shut up at night to protect them from vampires" (Nordenskiöld, 1979 [orig. 1924], p. 28). Other groups had dwellings "of a temporary nature, except [for Tsimane'] whose huts are in several places *of a more permanent kind*" (ibid. my emphasis, p. 23). They had platform beds (more so than hammocks), cradles, coverlets, and perhaps even metal nails (ibid., pp. 29, 31, 32). They had mills to grind maize, strainers for manioc, wooden cutlery, pipkins, rafts, dugout canoes, landing and carrying nets, baskets, and, he hints, they used querns and mortars as well (Nordenskiöld, 1999 [orig. 1926], pp. 128-129, 132-133, 176, 196, 204; 2003 [orig. 1922], p. 156). Tsimane' were carrying a lot of luggage. Even a century ago, they did not fit the portrait of an unclad hunting-gathering band wandering nimbly through the wilderness.

Nordenskiöld did not say much about the industrial tchotchke he saw among Tsimane', an ellipsis reflecting his allegiance to the collection of traditional artifacts for European museums, his immediate customers. In his writing, hidden, he nevertheless grudgingly acknowledged the presence of industrial wares. One reads oblique references to Tsimane' working for Westerners to get metal axes, industrial bed nets, metal fishhooks, and garments (Nordenskiöld, 2001 [orig 1924], pp. 158, 163; 2003 [orig. 1922], pp. 158, 161, 163, 174). Of the goods he brought with him to barter with indigenous peoples in his sojourn, metal knives, metal axes, and thick darning needles were the ones Tsimane' wanted most (Nordenskiöld, 2001 [orig 1924], p. 153). In his book, *Exploraciones y aventuras en Sudamérica*, a rueful Nordenskiöld echoes Armentia's observation decades earlier:

[The] worst thing is [Tsimane'] find it hard to free themselves from White people because they have gotten used to iron and cannot do without it (Nordenskiöld, 2001 [orig 1924], p. 159)ⁱⁱ.

Possibly, during Nordenskiöld's stay, Tsimane' did not have Winchester rifles, shotguns, sewing machines, and large wardrobes, present in the other groups he visited (Nordenskiöld, 2003 [orig. 1922], p. 82). Or perhaps they did but Nordenskiöld's eyes, so fixed on salvaging the unspoiled material culture of native peoples overlooked industrial goods.

When Nordenskiöld's visited them, Tsimane' showed signs of having circumvented the dead hand of culture. They already had a syncretic material culture made up of Western goods and traditional artifacts. Whatever their *mélange* of assets, Tsimane' did not care about getting more of a good, whether Western or autochthonous. One axe, one bow was enough for them, was all they needed. Here is Nordenskiöld:

It is not always easy to exchange goods [with Tsimane'] and get what one wishes because Tsimane' only have what they need. They have nothing else besides a bow and an arrow and the tools to make them. One needs a pot to cook and there isn't always a second one. Each woman has a carrying bag which she doesn't do without. Tsimane' only make a new object when they need it, never before (Nordenskiöld, 2001 [orig 1924], p. 157)ⁱⁱⁱ.

Except for one account, we have nothing to tell us how the material culture of Tsimane' changed after Nordenskiöld left^{iv}. When the German anthropologist Karin Hahn-Hissink and her husband visited the area in the early 1950s they found and took photographs of Tsimane' wearing t-shirts and commercial hats (Hahn-Hissink & Hahn, 1989, pp. 138, 152).

These fleeting ethnographic nuggets of Tsimane' material culture support our approach to the study of asset wealth. First, ethnohistory vindicates our stress on the individual ownership of assets; private ownership goes back at least a century. Why else would Tsimane' build pens for their fowl? Nowhere does Nordenskiöld say the fowl, the canoes, the bows belonged to the clique. Today, Tsimane' feel each person has the right to own and use what they acquire or make. A wife and a husband each own their own cutlasses, hens, shoes. They know exactly what you mean when you ask them "*how many cutlasses do you own?*" In the 2004 yearly survey we asked each spouse who decided what to buy. Each said they decided. For example, when we asked them who decided on clothing purchases, the wife and the husband each said they decided, but wives said husbands decided when to buy a surplusage of (often bootless) goods (Godoy et al., 2006). Parents gift children with fowl, an issuance meant to teach children about livestock care. Children are free to sell the fowl or eggs they own.

Private ownership does not mean Tsimane' angst about guarding or caring for their belongings. At the beginning of the twentieth century, huts had no walls or, if they did, Tsimane' left them open for anyone to come in (Nordenskiöld, 2001 [orig 1924], p. 163). Walk through a Tsimane' village today and you see waif of tools strewn on the ground, rump livestock, clothing, flotsam and jetsam scattered about courtyards, broken bicycles, cotton bags everywhere, cooking pots and cutlery sprinkled in the kitchen. Unconcerned about their possessions, Tsimane' lack domestic decor. Same was true a century ago. "Most of their belongings are on the floor," Nordenskiöld said (2003 [orig. 1922], p. 155). But change has taken place. Unlike Nordenskiöld's time, today you see padlocked doors in village houses closer to towns. People are more likely to borrow a traditional asset like a canoe without asking the owner, than they are to borrow a store-bought good. You asks an owner first before taking their rifle or radio^v.

The second aspect of our approach buttressed by past ethnographies has to do with the choice of goods included in our surveys. Many of the assets we asked about were assets present

and important to Tsimane' in Nordenskiöld's time. Those canonical items defined a Tsimane' then just as they define one now. During our study, Tsimane' still used some of the goods Nordenskiöld saw, like bags, fowl, and dugout canoes, but they have dropped other goods to replace them with industrial cognates. In our surveys we asked about some of the articles crafted from handy materials mentioned by Nordenskiöld, like canoes and bags, some of the industrial goods he saw, like mosquito bed nets and metal axes, and some of the livestock he saw, like chickens. To that basket we added new items unknown among Tsimane' in Nordenskiöld's time, but available during our study, like radios and watches. In Table 9.2 (part A), I split the 22 assets we measured every year into three bundles that have ethnohistorical backbone: commercial goods, articles crafted from local materials, and livestock.

Insert Table 9.2

Two final points before closing this section. First, some definitions, operose but needed for clarity. By hand mill I mean a manual grinder to crush maize kernels. A quern resembles a Mesoamerican stone *metate*. Among Tsimane' it consists of a flat wooden tray with a depression, and a cylindrical hand-held stone to grind food on the tray. Made by women from the cotton plant, bags resemble all-purpose tote bags with one handle. The handle is placed on the shoulder or across the upper forehead, in which case the weight falls on a person's back. Bags are used to carry crops and women to carry babies. As in the past, boys and men use bows to fish and hunt birds. You can see querns, people using bags, women making bags, and men fishing with bows and arrows in the photographs Karin Hahn-Hissink and her husband took in the early 1950s (1989, pp. 143, 153).

The second and last point is about borrowing. Individual ownership of assets embodied in the right to dispose of an asset is half the story; borrowing and rieving are the other half. Individual private property matters because it is the embryology of indigence and inequality, but it matters less if people can offset what they lack by borrowing. I discuss general borrowing and theft in another chapter, but in this one I furnish a terse description - for a handful of assets for which I have data - of how those who don't have borrow from those who do.

Yearly ownership of selected physical assets

The assets measured. From the outset we wanted to pinpoint the physical assets adults owned: the pots, the canoes, the bags, the rifles, the bicycles, the knives, the chickens in their hands. By watching them we saw what people had and, based on this understanding, we made an inventory of the items we would eventually ask about in the surveys, an inventory we thought captured the assets all villagers owned, from the worse off to those in a comfortable economic state. We asked about the ownership of things like rifles, shotguns, and cattle because only the affluent had them. We asked as well about cotton bags, knives, and cooking pots because these goods all seemed to own, even dotards living alone. Some belongings women were more likely to have (e.g., cooking pots), some men (e.g., rifles), and some both (e.g., knives).

Our measure of wealth omits aspects seen in other wealth studies. We could not include access to electricity, running water, sewage, or the value of real estate because, at the start of the study, villages lacked public utilities and nobody sold land or houses. Financial assets were also left out. Other than a pittance of cash at hand, people did not have access to mutual funds, stocks, pensions, bonds, or bank accounts. They had debts of cash to traders and kin, liabilities I

could have brought into this chapter to estimate an adult's net worth. I exclude financial assets, financial liabilities, and net worth because I would rather tell a tight tale of material wealth than a loose one of all wealth.

Enumerators asked adults almost every year to tell them how many items they owned from a list of items enumerators read to them (Table 9.2). The items fell into two categories. First, there were *core* items, which surveyors asked about every year. *Core* assets fell into one of three buckets. There were *commercial* assets from the market, the industrial world, like metal tools. Then there were assets Tsimane' made from *local* materials. Last, enumerators asked about the ownership of four domesticated *animals* (poultry, pigs, ducks, and cattle), which Tsimane' kept for food, barter, or sale. Over time, we saw Tsimane' owning assets rarely seen at the outset of the study. We saw footwear and, later, we saw things like DVDs and cell telephones, which did not exist in the Maniqui basin at the birth of the study. In 2017, enumerators started asking about the ownership of flip-flops and shoes, and, in 2010, they sandwiched in questions about four *luxuries*: televisions, cell telephones, DVDs, and gasoline-powered motors, used to produce electricity for the house. I speak of *core* assets meaning assets measured every year from 2002 until 2011 and I speak of *additions* to mean *footwear* and *luxuries*, which we added later. When assessing trends, I use *core* assets from the longitudinal study (2002-2010) because they allow for a spackle analysis of change; bringing in *footwear* or *luxuries* would make earlier and later measure of wealth amounts or wealth inequality incomparable since early and later measures would embrace different assets.

Quality of data on asset quantity. Information on asset quantity had at least four shortcomings. We did not ask about the age or quality of assets. For each manufactured item still functioning, we asked villagers to count how many they owned. To us, a radio was a radio no matter its age. We followed the same logic with livestock. We lumped all chickens owned by a person into one cipher, regardless of the age or health of the chickens. Second, we could have done better when picking assets. In hindsight, we should have first done a formal survey of all adults' belongings in some villages, from villages near towns to the ones farthest away, to get a tighter grasp at what people in all steps of the affluence ladder owned. The task accomplished, we should have chosen a smaller bundle of assets reflecting, in truth, what everyone had, rich and poor. We followed the spirit of the approach while not quite toeing its line, for we did not test if the wares we asked about in the survey we finally ended up using captured wealth differences between nabobs and needy, between women and men. A small formal survey would have allowed us to spot now obvious articles we missed, like blankets, flashlights, and garments. A third shortcoming came from noisy answers spawned by memory lapses and weak counting skills. Villagers could have forgotten to include assets lent to neighbors; those with weak counting skills, widespread among Tsimane' (Undurraga et al., 2013), could have surmised answers about the quantity of an asset they owned. Last, we probably counted some assets twice because we did not code for spousal co-ownership^{vi}.

The shortcomings do not derogate from the advantages of asking people about their tangible belongings, most of them in front of them. Unlike questions about cash income, barter, or expenditures, questions about the ownership of palpable belongings did not burden villagers with remembrances. Telescoping bias vanishes when counting present objects and, for different reasons, so do rounding errors. As we shall see, other than five goods — cotton carrying bags, cutlasses, hens, fishing hooks, and knives — most people did not own assets, or, if they did, as with these demotic goods, they owned one, giving respondents little room to round whole

numbers. Because questions about asset ownership were straightforward — "*How many chickens do you own?*", "*How many cutlasses?*" — and because the range of possible answers was small since people owned so few, the questions begot few blank stares or missing values. Unless villagers wished to hide their wealth, or unless they wished to finish the interview fast, they had no reason to say "*I don't know*" when asked about their belongings. Of the 7,991 records for *core* assets, 1.06% had missing values and of the 4,992 records for *footwear* and 1,771 records for *luxuries* (*sensu* Table 9.2), 0.5% in each of the two categories had missing values. I bowdlerized slightly the dataset by dropping records without values because so few foibles will not shipwreck the analysis.

Results. Tables 9.3A-9.3D and Figures 9.1A-9.1C, which build on those tables, show descriptive statistics of the assets owned by adults.

Descriptive findings of whether people owned the asset. I start by describing whether people owned an asset, not the quantity of an asset they owned (Figure 9.1A). First, many adults did not own a single basic asset, like a mosquito bed net, a knife, a fishhook, or footwear. Thirteen percent of adults did not own a mosquito bed net, 21% did not own a knife, 28% did not own footwear, 30% did not own a fishhook. Second, other than hens, few people owned livestock. Four percent owned cattle or ducks while 11% owned hogs. Third, the share of people who owned an asset crafted from local materials — cotton bags, querns, dugout canoes, mortars, bows and arrows — varied from a high of 81% for cotton bags to a low of 11% for querns. Fourth, assets fell into two clumps. There were common goods owned by at least 70% of people, goods like mosquito bed nets, cotton carrying bags, knives, cutlasses, *footwear*, and fishing hooks. At the other extreme were goods owned by a few, such as firearms (15%), watches (13%), bicycles (10%), and *luxuries* like televisions and cell telephones (2-3%).

Insert Figure 9.1A and Table 9.3A-9.3B

Reasonable as a starting point, Figure 9.1A un.masks finding while blurring them because it hides differences between the sexes. For several reasons we need to know what women and men own. First, the sexual division of labor prompts women and men to acquire goods congruous with social expectations. Tsimane' assess men by their hunting skills, women by their weaving skills. Thus, women should own more cotton bags, men more weapons, modern or traditional. Women and men can replace each other in some chores, like weeding and fishing, but not in other chores. Tsimane' women do not hunt, they do not ride bicycles; men do not ferment beverages or weave cotton bags. Some assets are tagged for women, some for men. Second, since many of the assets tallied come from the market and since men handle more cash than women, as seen in the previous chapter, they could, as well, end up with more commercial belongings. Last, women and men own what they make; men carve out dugout canoes, women weave cotton bags. If effort betokens ownership, we should see differences in the share of articles crafted from reachable materials made by women and men.

Figure 9.1B compares the share of each sex owning an asset. Again, some findings stand out. Except for cotton carrying bags, hens, ducks, and cooking pots, assets were more likely to be owned by men. Some examples. Sixty-eight percent of men owned axes compared with ten percent of women. Ninety-six percent of men owned a mosquito bed net compared with 78% of women. Forty-three percent of men owned mortars compared with 22% of women. Table 9.3C

shows that during many years less than one percent of women (sometimes none) owned a bicycle or a firearm. One can rely on culture to explain some of the differences. Since women do not hunt, it makes sense they would be less likely to own firearms, or bows and arrows. In Tsimane' society, women weave cotton bags and, for social occasions, they ferment beverages in large metal cooking pots. Unsurprisingly, a greater share of women owned these wares (bags: women = 94% versus men 68%; pots: women = 26% versus men = 16%). One could stretch the explanation to embrace assets falling in a gray area. Both sexes use axes to split logs for firewood, but men, in addition, use them to clear forests for farming. Perhaps for this reason, 68% of men while only 10% of women owned axes.

Insert Figure 9.1B and Table 9.3C

What culture cannot explain well is why men are freighted with assets lacking a gender tag, like electronic gadgets (*luxuries*), cutlasses, mosquito bed nets, fishhooks, or knives. Maybe we are asking the wrong question. Who cares what men own if a wife and children can sleep inside the mosquito bed net owned by the husband, if wife and children use men's knives and fishhooks lying about, if anyone in the house can turn on the radio to hear news from the missionary station? I return to this point in the conclusion.

Figure 9.1C builds on Figure 9.1B and highlights net differences in what each sex owns. The figure displays the difference in the share of men minus the share of women owning an asset. Figure 9.1C shows assets falling into four clumps. After describing the clumps, I try to explain why the histogram resembles a pan flute.

Insert Figure 9.1C

At the rightmost of the x-axis lies the easiest clump to describe. With cotton bags, large cooking pots, hens, ducks, and (maybe) pigs, women best men. These goods women make (bags), manage around the home (ducks, hens, pigs), or use to show their skill as brewers (cooking pots). Next are assets at the leftmost of the x-axis, stretching from bows to firearms. Other than bows, they must be bought in the market, and, other than radios, they undergird a melded mode of subsistence encompassing hunting, fishing, and horticulture. Bows and arrows, axes, fishing gear, firearms, and cutlasses Tsimane' need to forage and farm. Putting cash in the hands of men, it seems, lets them buy more assets entwined with subsistence, widening the ownership gap of these assets between the sexes. Though sensible, the subpart explanation feels unfinished. Like men, women fish. Fishhooks being inexpensive, they could be easily obtained by women through barter or footling change. Women and men use cutlasses for many ends, such as weeding, planting, clearing underbrush, and cutting firewood. One would expect the gender gap in *machetes* or fishing gear to be small; it isn't, maybe owing to informal borrowing. The third clump consists of (mostly) commercial goods hitched to the home, yard, and transport, not directly interlaced with subsistence, as was the case with the second clump. In the third clump we find *footwear*, dugout canoes, watches, mortars, mosquito bed nets, and bicycles. Again, except for wooden mortars, which men carve, all the other goods come from the market. The last clump consists of kitchenware and *luxuries*. The gender gap is small because luxuries costs too much for women or for men to buy; the percentage of women or men owning luxuries is too small for net differences between the sexes to stand out. Hand mills for grinding, knives, and

querns are inexpensive and needed for cooking. Of the home and hearth, these goods are culturally apt for women to acquire and for men to eschew.

In sum, the male-female gap in asset ownership contracted as one goes from the public sphere of subsistence (bows to firearms in Figure 9.1C) where the large gap favored men, to the liminal, personal, more home-based sphere related to transport and status (*footwear*, watches), to the expensive assortment of electronic *luxuries*, ending with knives and querns, inexpensive goods defining a woman; here the gap reversed to favor women. A coarser summary says that – other than cooking pots, cotton bags, and fowl – men own more of everything than women.

Time trends in the chances of owing an asset. Table 9.4 has information to assess if the male-female gap in the probability of owning an asset changed during 2002-2010. Because the focus is on change, I limit Table 9.4 to the 22 core assets measured every year from 2002 until 2010 (Table 9.2, section A).

Insert Table 9.4

Recall from the previous section that women owned more cotton bags, cooking pots, hens, and (maybe) ducks than men. Except for cotton bags, the chances of owning these goods barely changed over the years. The probability of owning a duck or a pig declined by -0.4 and one percentage points per year while the chances of owning hens and cooking pots changed slightly. The probability of owning a cotton bag rose yearly by one percentage point. Thus, the likelihood of owning an asset in which women had an edge remained flat. In contrast, the chances of owning six of the 22 goods in which men had an advantage – however small the advantage – grew, from a high of three percentage points per year (hand mills), to two percentage points per year for fishing nets, to one percentage point per year for radios, cutlasses, mosquito bed nets, and knives. This much says sex differences in the growth rate of asset ownership widened during 2002-2010.

A second look at Table 9.4 shows the conclusion could be a canard. The chances of owning half of the 22 core assets did not vary in time. The likelihood of owning tools, such as axes, fishhooks, or hunting weapons did not change, nor did the probability of owning assets used to transport (canoes, bicycle) or the chances of owning sundry things (e.g., cooking pots, mortars, cattle). Exposure to outsiders and the market might lift the protective scrim of autarkic societies, but it has yet to unleash unbridled growth in inequality. Something must intenerate the blows of the market and discomfit acquisitiveness.

Number of assets owned: Descriptive findings and trends. In acquisitiveness, Tsimane' have not changed since Nordenskiöld's time. When they own an asset, they own one. One cutlass, one hand mill, one pot, one quern is all they need and have (Table 9.5), though livestock and bags they have many.

Insert Table 9.5

Women were less likely to own an asset than men. Table 9.6 shows that when they owned an asset, women had a smaller amount than men. Women had 122% fewer fishhooks, 78% fewer cutlasses, 45% fewer mosquito bed nets, 29% fewer cows, 23% fewer axes and fishing nets, down to nine percent fewer radios. Only with cotton bags, which they make, did

women outdo men, owning 81% more bags than men. Women and men did not differ in the number of hand mills, cooking pots, rifles, watches, canoes, mortars, querns, fowls, and swine they owned.

Insert Table 9.6

For those who owned an asset, the quantity of many assets did not change through time. The number of bicycles, hooks, knives, hand mills, cooking pots, radios, firearms, watches, ducks, and articles made from handy materials did not change during the nine years of the study. The quantity owned for a smattering of articles did grow. The number of axes, cutlasses, mosquito bed nets, fishing nets, hens, and pigs owned increased by 1% to 5% each year. Among all belongings, only heads of cattle declined, by 5% each year.

Inequality in the quantity of assets: Levels and trends in Gini coefficients for each asset.

This section presents a more formal method of measuring and describing asset inequality: the Gini coefficient. I tally the Gini coefficient from the quantity of the asset belonging to adults, including those who did not own the asset^{vii}. In principle, Gini values can range from zero, complete equality, to one, utter inequality, such as would happen if one person hoarded all the assets of the assemblage. Table 9.7A displays the Gini coefficients of inequality for each of the 22 assets, by year and combined for all years and both sexes. From the column "Totals" of Table 9.7A I produced Figures 9.2A-B; the figures show the Gini coefficients for the nine years combined for both sexes, ordered in the same way as in Table 9.7A (Figure 9.2A), but then ordered by the size of the Gini coefficient (Figure 9.2B).

Insert Table 9.7A and Figures 9.2A-9.2B

Figures 9.2A-9.2B show asset inequality varied by asset type, from livestock (excluding fowl) with Gini coefficients over 0.90 to popular goods like mosquito bed nets, knives, and cutlasses, all with Gini coefficients near 0.40. Second, the Gini coefficients of assets made from local materials covered a wide gamut, from a low of 0.48 for bags to ~0.70 for mortars or bows, to a high of ~0.88 for querns and dugout canoes. Based on the asset one chooses to assess and describe economic inequality, one could turn Tsimane' into an egalitarian or an unequal society. Third, the Gini coefficient of bicycles, watches, and radios – all luxuries in my accounting – was high, but not too different from the Gini coefficients of earthly articles made from local materials. The Gini coefficient of bicycles (0.90) and watches (0.87) was almost the same as the Gini coefficient of querns and dugout canoes (0.89), while the Gini coefficient of radios (0.74) had near neighbors with the Gini coefficients of mortars and bows (~0.70). Fourth, inequality of local goods was as marked as inequality of commercial goods. Excluding livestock, the Gini coefficients of commercial assets were among the lowest (mosquito bed nets, knives, cutlasses) and among the highest (bicycles, watches) of the 22 Gini coefficients.

Why would Gini coefficients for different assets vary so much? The answer could lie in many reasons, but here I pick prices because it provides a reasonable explanation. I next show, side by side, the Gini coefficient and the price of each asset. In Figure 9.5A I rank the median real price of the 22 assets, from assets with the lowest unit price such as fishhooks and knives, which cost less than 10 *bolivianos* a piece, to the most expensive ones such as firearms and cows, each costing over 850 *bolivianos*. In the next section I discuss how I reckoned prices; for

now, note that the grand median real price of an asset for 2002-2010 shown in part A comes from yearly measures of inflation-adjusted prices. In part B of Figure 9.5 I show the Gini coefficient for the same assets shown in part A, with the Gini coefficients in part B tallied across all years and both sexes. I draw a trend line in part B to highlight the relation between the Gini coefficients of different assets, but the trend line is somewhat deceptive for reasons discussed next.

Insert Figure 9.5A-9.5B

The amount of asset inequality and the real price of an asset moved in rough lockstep. Part B shows that starting with bags in the middle of the x-axis and moving to the right, all the way to cattle, Gini coefficients rose in tandem with real prices, shown in part A. For these assets, the Gini coefficient of asset inequality and the real price of the asset went together. Higher prices, more inequality. Nevertheless, for assets to the left of bags (in section B), from fishhooks to querns, you see a sine-like wave of inequality, with ups and downs. Take kitchen knives, one of the cheapest assets (8 *bolivianos* a piece) and one with the lowest Gini coefficient of asset inequality (0.42). After knives, the two most expensive goods were hens and ducks, priced at 22 and 30 *bolivianos* a piece. For these two goods, the Gini coefficient jumped from 0.42 for knives, to 0.70 for hens, peaking at 0.97 for ducks, only to fall again to a Gini coefficient of 0.46 for cutlasses, which had the same unit price as ducks (cutlass: 31 *bolivianos*; duck: 30 *bolivianos*). Among the most inexpensive assets, ducks had the second highest Gini coefficient (0.97) after cattle (0.98). In short, prices could explain inequality for half the assets (the pricy ones), but they cannot explain why inequality varied so much among cheaper goods costing less than 80 *bolivianos*.

Figure 9.3A compares the Gini coefficient of asset inequality between women and men. The figure shows that, with few exceptions, women had more asset inequality than men. Figure 9.3B contains a summary of the difference in the Gini coefficient for each asset between women and men, with differences in Gini coefficients ranked from highest (women have much more asset inequality than men), shown at the left of the x-axis, to lowest (men have more asset inequality than women), shown at the right of the x-axis.

Insert Figure 9.3A-9.3B

It is challenging to understand why the difference in asset inequality between women and men varies so much. An Occamistic explanation would say that when women are shut off from hunting and the market economy, a few women owning bows and arrows, a rifle, or a mosquito bed net is all one needs for inequality in the female ownership of these assets to take off and surpass the asset inequality of men, who routinely own these assets. Greater inequality in asset ownership among women says more about women's privation than about their greed, about the have-nots than about the grasping haves. If some women, by chance, through effort, or from kin get a few assets, inequality in the ownership of those assets among women will eclipse inequality in the ownership of the selfsame assets among men. When some make it in a homogeneous assembly, disparities rise. With hens, pots, and bags, accessible goods defining a woman, asset inequality is greater among women than among men, but the difference is almost never as large as the female-male difference in the inequality of other belongings.

To tighten the story, Figure 9.3B needs to be fixed by dropping male articles like bows and firearms; one can then compare goods which are culturally appropriate for both sexes to own. After editing Figure 9.3B one is left mostly with commercial goods: axes, radios, fishing hooks, fishing nets, watches, cutlasses, mosquito bed nets, hand mills, and knives. To get any of these goods requires cash from vendible crops or wage labor, and since women have less cash, a couple of women owning a few such goods will be enough for the asset inequality of women to surpass that of men.

Figures 9.4A-9.4C and Table 9.8 show changes from 2002 until 2010 in the Gini coefficient for each of the 22 assets. What the figures show, and what Table 9.8 shores up, are fuzzy trends. Inequality rose yearly for seven goods: rifles, bicycles, ducks, pigs, querns, dugout canoes, and bows. For another seven goods, asset inequality cratered: bags, cutlasses, knives, mills, fishing nets, radios, and watches. For the rest, asset inequality did not change. The Gini coefficients of cows, hens, mortars, cooking pots, axes, fishing hooks, shotguns, and mosquito bed nets stayed flat. Some might think exposure to the market economy and modernization fuels inequality in the backlands. Perhaps. So far, during our admittedly short study of this tucked corner of the world, asset inequality has not changed much.

Insert Figure 9.4A-9.4C and Table 9.8

Summary of results. Depending on the vantage point of narrators, they could conclude Tsimane' are **(i)** an asset poor but equal society or **(ii)** an asset poor and an unequal one. Many adults did not own assets to follow a daily rut, and, when they owned the asset, they had one, as they did in Nordenskiöld's days. If one wished to stress the asset indigence of Tsimane' one would underscore the fact that a quarter of adults did not own a fishhook, footwear, or a knife, all necessities, at least today. Asset inequality is slipperier to nail down than asset indigence. Some assets many people owned. At least 70% of adults owned mosquito bed nets, fishhooks, cotton carrying bags, knives, cutlasses, and some type of footwear. The Gini coefficient for popular wares like knives, cutlasses, and mosquito bed nets was low, about 0.40, showing Tsimane' have a good deal of asset equality. Common assets show Tsimane' conform to the egalitarian state one expects to find in a cocooned economy. However, other assets showed much inequality. Offsetting popular belongings were uncommon ones, like livestock (other than hens), firearms, and *luxuries*; less than 15% of adults owned these goods. Unusual assets like larger livestock and bicycles had a Gini coefficient of 0.90, near perfect inequality.

Women were less likely to own most assets than men, and, for this reason, asset inequality among women surpassed asset inequality among men. Hens, cotton carrying bags, and cooking pots women were more likely to own than men. These assets women make, use, or manage every day; some of them define a woman. For all other belongings, men had an ownership advantage, even over androgynous wares. Ten percent of women owned axes compared with 68% of men. Almost all men (96%) owned a mosquito bed net; only 78% of women did. When most people lack an asset, a few people owning the asset swerves inequality to the extreme. For axes and radios, the Gini coefficient of inequality among women was 0.30 to 0.40 points higher than the Gini coefficient of inequality among men. For other assets like mosquito bed nets, hand mills, querns, and knives, the Gini coefficient of inequality among women still eclipsed the Gini coefficient of inequality among men, but the gap narrowed to about 0.10.

Time trends in the ownership of assets during 2002-2010 did not show a clear pattern, understandable given the short duration of the study and the broad array of goods scrutinized. Only two assets showed unmistakable, consistent trends over this short time. The chances of owning cutlasses and mosquito bed nets, and the quantity owned of these assets rose every year. Yearly changes in the ownership of other goods were small or inconsistent, meaning the chances of owning the asset changed over time while the quantity did not, or vice versa. Time trends for Gini coefficients could support almost any story one wished to tell about the growth or decline of inequality. Table 9.8 shows the Gini coefficient for seven of the 22 core assets fell; for these assets, the passage of time reduced inequality. For another six assets, the Gini coefficient rose; time made things worse. And for the remaining nine assets, the Gini coefficient did not veer. I find it odd that when inequality fell, it did so almost entirely among commercial assets, odd because those assets owners could only fetch with cash. Of course, if more people enter the market economy as sellers or workers, then cash will become widespread and, with it, so will the likelihood of buying industrial wares, which will lower the gap in the ownership of store-bought goods. Like the ownership of assets, trends in the Gini coefficient for different assets provide fodder for any tale about how the unfolding of time, modernization, and engagement with the market economy changes the distribution of assets in autarky.

Time, gender, and asset type partly explain why inequality varies. In addition, the real price of an asset had something to do with the amount of asset inequality. Pricy assets were more unequally distributed than cheap ones, but the finding applied to half the assets. For the other half, the inexpensive ones, prices bore no recognizable relation to the amount of inequality.

Construction of data on prices, asset values, and Gini coefficients of asset values

Here I detour to explain the construction of data on prices, asset values, and Gini coefficients of asset values, all of which I use later when examining the size and trends in the Gini coefficient of asset values.

Construction of data on prices and asset values. Adults end up with assets by buying them ready made, or by making them with the plants about them. They purchase tools, cutlery, and household appliances in stores. They buy livestock from each other, ranchers, or highland homesteaders. And, with their labor, they parlay nature into usable articles. The manifold ways Tsimane' use to get assets pushed me to rely on eclectic methods to retrieve information on asset prices: [i] expenditures by adults, [ii] survey of community buying and selling prices, and — when the first two methods turned up nothing — [iii] I imputed prices (Table 9.9).

Insert Table 9.9

[i] *Expenditures by adults.* To find the price of an asset I use yearly expenditures on commercial assets and livestock. By dividing the total yearly expenditures a person made to buy an asset by the quantity bought of the asset, I get the median yearly buying price for the asset in the sample. I impute this one price to the total quantity of the asset owned by any person in a year to arrive at the value for that asset for a person. An example. The expenditure survey of 2010 shows that of the total sample of 659 adults, 24 had bought metal axes. If, for 2010, I divide the cash expenditures in axes of these 24 adults by the number of axes they purchased, I get a median value of 80 *bolivianos* for an axe (mean = 84 *bolivianos*; standard deviation = 33

bolivianos). I picked the median instead of the mean price to protect myself from the six-fold variation in axe prices, which ranged from a minimum of 30 to a maximum of 203 *bolivianos*. I multiply the median price by the number of axes owned by each individual in 2010 — even if they did not buy or own an axe in 2010 — to come up with the value of axes for each individual in 2010. Every year during the study period (2002-2011) the median nominal price of an axe changed, leaving us with ten prices for an axe, one for each year.

[ii] *Survey of community buying and selling prices*. The word *community* in this section comprises towns and villages. During the yearly survey our surveyors went to a town store to ask about the selling price of commercial goods included in the asset survey. The number of towns visited varied from one (San Borja) in the early years of the longitudinal study (TAPS) to two (San Borja and Yucumo) starting in 2004. The baseline of the randomized controlled trial of village income inequality (2008) included the towns of San Borja and Yucumo, but for the trial on savings (2011) we added a third town (Palmar).

To retrieve data on village prices enumerators asked one or more village leaders to tell us about the most recent selling or buying price of the good in the past three months. Depending on the good, a price could refer to the price at which villagers had sold or bought the good. For instance, we asked about the selling price of livestock or about a few goods Tsimane' make because these articles they usually sell, but we also asked about the buying price of commercial goods because Tsimane', rather than buying commercial goods in stores, sometimes buy them in their homestead when merchants drop in villages.

In Table 9.10 I show the wording of questions to collect price data during the most recent community surveys (2011). Since the wording of questions barely changed during the study, the wording from the 2011 survey reflects well how we retrieved price data most of the time.

Insert Table 9.10

I use information from community surveys only when I could not find price data in the expenditure survey. This happened when nobody reported buying an asset, but when, presumably, someone in the village had sold the asset, as displayed in the survey of village prices.

Data from the survey of village prices is needed to value articles made by Tsimane', for stores do not sell these articles. In Table 9.9, the row "Local" shows Tsimane' never bought goods they made; prices for locally-made goods came from the survey of village prices. Wouldn't you expect a Tsimane' to sometimes buy a quern or a dugout canoe from a villager? Apparently not, at least not according to our expenditure surveys, though these types of purchases likely happen. Table 9.9 also shows that in none of the village surveys of 2006, 2009, and 2010 could we find a price for querns, dugout canoes, or hand mills. When asked to report the village selling price for one of these items, village leaders said they did not know of any sale having taken place in their community in the past three months. When this happened, I imputed a price. I used the median price of the asset from the year before and the year after the year with a missing price, averaged the two prices, and imputed the average to the year with the missing price. Table 9.9 shows that in 2004 and 2009-2011, livestock prices appear in the expenditure survey of adults and in the survey of village prices. When faced with the choice of two prices from different sources, I went with the price from the expenditure survey because it came from a larger sample.

[iii] *Price imputation and the hierarchy of choices: Recap.* For each survey year, I chose the median asset price before multiplying it by the quantity of the asset owned by the adult to arrive at the asset value. When picking prices, I first relied on prices from the expenditure surveys. If I could not find such a price, I turned to prices from the survey of community prices, and, if there was no buying or selling price for an asset in a year, I averaged the median price of the asset from the year before and the year after, and imputed the average to the year with the missing price.

Quality of price data.

[i] *Expenditures by adults.* Retrieving prices from expenditures had advantages and disadvantages. Advantages: Every year, I pulled out the asset price from actual (remembered) expenditures by all adults. Since surveys took place during the dry season (May-September), the timing of the survey controls for price variation between seasons. Disadvantage: I impute one price to all people in a year, lethe to the quality or age of the asset. In my accounting, two people, each owing three axes in 2010, would both end up with a nominal asset value of 240 *bolivianos* for the axes they owned (median price of 80 *bolivianos* per axe times three axes), even if the axes of one owner were new and those of the other tattered and broken. The approach does not capture price variation inside or between villages. One size fits all in my reckoning, an ignorable methodological solecism. Here is why. I could have computed the yearly median buying price of an asset in each village and imputed the price to all people in the village. Had I done so, the price of an asset in a village would have come from fewer observations and I would have been stuck with more villages *sans* prices since it is more likely that in some villages, in some years, nobody traded an asset. Furthermore, this presumably improved approach, while fêting diversity, would have made estimates more assailable to outliers. Suppose only one adult in a village during a year bought an axe, and paid 200 *bolivianos* for the recently minted axe. Why should all adults who owned axes in that village be entitled to have their axes valued at this high price?

[ii] *Survey of community buying and selling prices.* In the village survey we asked one or more leaders about recent prices in their community. Answers from each respondent were not coded separately. We cannot tell the number of people who answered, or if answers in the dataset capture the mode or the average response. Possibly, sometimes answers came from one person. When asking about community prices we specified the trait of some assets (Table 9.10). For example, we asked store keepers in towns about the selling price of a 150-liter cooking pot or a second-hand 22-gauge rifle. But for a few core assets, like watches and hand mills, and for assets added in later surveys under *footwear* and *luxuries*, we did not state a brand name or a characteristic. Some of the variation in the asset price between communities reflects what village leaders conjured up as they struggle to answer questions about indistinct assets.

[iii] *Net worth: Buying and selling prices.* We would have liked to approach a coarse measure of net worth - the cognizable value of vendible assets had owners sold them at the time of the survey - but could not because Tsimane' do not sell many of the goods we asked about. Other than small livestock, they generally do not sell things like rifles, canoes, bows. Instead, they buy them. For this reason, some assets had to be valued at their sellign price, some at their buying price. The mistake is innocuous if buying and selling prices mirror each other, which they don't. The monetry value of asset wealth I use comes from an alloy of prices tilted to buying prices.

Construction of data on Gini coefficients of asset values. I multiplied the quantity of an asset owned by a person times the asset price, added the value of assets, and tallied a supra Gini coefficient for the total worth of all 22 assets, combined for women and men and for all years. Besides this grand Gini, I also computed a yearly Gini coefficient for each of the 22 core assets for everyone and for each sex. Forsooth, I redid Table 9.3, with the difference that now I do not care about the distribution of quantities; I care instead about the total monetary value of three smaller asset bundles – commercial, local, livestock - and of all 22 core assets together.

Gini coefficients of asset inequality measured with monetary values

We start with the Gini coefficient of inequality in all assets, for all years and for both sexes joined (Table 9.11 and Figure 9.6). In a small sample this grand total has the advantage of burnishing mercurial variation in quantities or prices between years. The overall Gini coefficient for the nine years of the study among all adults reached 0.34. The highest asset inequality was in commercial goods (Gini = 0.60) and goods made from local materials (Gini = 0.53). Livestock had the lowest Gini coefficient (0.33). As before, with values, as with quantities, the amount of asset inequality hinged upon the type of asset examined.

Insert Table 9.11 and Figure 9.6

For the merged sample of women and men, the amount of asset inequality varied between years and asset type. The Gini coefficient of livestock and of goods made from local materials had the most year-to-year variation. The coefficient of variation (CV) of yearly Gini values was 0.18 for livestock and 0.21 for articles made from handy materials. The coefficient of variation of inequality for commercial goods was much, much lower, at only 0.05. The findings make it difficult to characterize asset inequality, for inequality depends not only on the type of asset, as just seen, but on the year of measurement as well.

A look at totals over all the years, across different asset bundles, shows that, compared with women, men had more inequality in all assets (Gini for men = 0.18; women = 0.15), in locally-made artifacts (Gini for men = 0.60; women = 0.40), and in livestock (Gini for men = 0.17; women = 0.14). Compared with men, women had more inequality in commercial assets (Gini: women = 0.57; men = 0.42). Men had more inequality in most assets than women, but women had more yearly variability in the inequality of some assets. The coefficient of variation of inequality for all assets for women was 0.28, higher than the coefficient of variation of inequality of all assets for men (0.19). For goods made from local material, the coefficient of variation for women was 0.20, compared with 0.14 for men. Women and men did not differ in the coefficient of variation for commercial goods or for livestock.

The right-most column of Table 9.11 shows the yearly growth rate of inequality for different types of goods and samples. *Caveat lector*, one should not make too much of the results because growth rates come from a sample of nine observations, one for each year. A salient finding shows up. Except for inequality in articles made from local materials, inequality in the other asset bundles fell. Inequality for all goods combined for both sexes increased by 0.3%/year, while inequality in goods Tsimane' fashion increased yearly by 5.1% for all, by 3.9% for women, and by 3.6% for men. These cases aside, inequality in everything else shrank, sometimes by a large amount, sometimes by a tad. Women had the largest reductions in inequality. The Gini coefficient of all goods and of commercial goods owned by women fell

every year by 5.9% and by 2.6%. Inequality in commercial goods and in livestock always fell for any sample: women, men, or both. The takeaway from the modest sample is clear: growing economic inequality, seemingly common around the globe, has yet to reach this withdrawn corner of the Amazon.

Where is Tsimane' monetary wealth? Where is it going?

Over all the years of the study, the median yearly real wealth of an adult Tsimane' reached 4,289 *bolivianos* (SD), women (2,758 *bolivianos*) having much less wealth than men (8,066 *bolivianos*) (Appendix A). At an exchange rate of about seven *bolivianos* to the USA dollar, the gross wealth of a typical adult Tsimane' would reach \$612. Figures 9.7A-C, which draw on the statistics from Appendix A, show where Tsimane' store wealth. The pie charts also show trends in the makeup of wealth for women and men jointly (Figure 9.7A), for women (Figure 9.7B) and for men separately (Figure 9.7C).

Insert Figures 9.7A-9.7C

Tsimane' store their asset wealth in domesticated animals. Livestock accounted for 77% of total monetary wealth across all years among the combined sample of women and men (Figure 9.7A). For the complete sample and all years, the share of wealth kept in animals went from a low of 68% in 2003 to a high of 82% in 2006 (Figure 9.7A). By far, domesticated animals ruled the asset portfolio of wealth, whether among women (79%; Figure 9.7B) or men (77%; Figure 9.7C). Below livestock stood commercial assets, which, across all years, captured 15% of the total asset wealth of women and men combined (Figure 9.7A), 9% among women (Figure 9.7B), 18% among men (Figure 9.7C). Having greater access to cash and more chances of buying industrial goods, men ended up with a greater share of their wealth in manufactured wares. Local artifacts came last. They accounted for 7% of overall asset wealth for both sexes (Figure 9.7A), more for women (11%; Figure 9.7B) than for men (6%; Figure 9.7C).

Accurate though they are, Figures 9.7A-9.7C twist reality because in a small sample a couple of high-end goods owned by a few parvenu could change conclusions about how the average Tsimane' stores wealth. I have in mind expensive livestock like swine and cattle, owned by 11% and 4% of people (Table 9B). The price of cattle towered above the price of other goods (Figure 9.5A). Cattle ownership could be the invisible hand behind Figure 9.5A.

To streamline the added analysis I am about to present, I took out all livestock except for hens and re-drew the pie charts. The new charts changed the story (Figures 9.8A-9.8C). In the sample combining all years and both sexes (Figure 9.8A), less than 3% of wealth now lay in livestock (yearly range: 1% to 5%), down from 77% in Figure 9.7A. Commercial assets took over animals as the foremost vehicle for keeping wealth. Under the new definition of livestock, commercial assets captured 67% of wealth (yearly range: 59% to 70%) while articles made from local materials captured 30% (yearly range: 26% to 37%). Striking differences appear in how women and men stored wealth (Figures 9.8B-9.8C). Men kept 75% of their wealth in commercial wares; women only 42%. Women kept half of their wealth stored in articles they made from plants; men only 24%. Chickens stored 7% of women's wealth, compared with 2% of men's wealth. One could repackage the asset bundles in endless ways, taking out an asset here and adding one there, to spin different tales about how villagers stored wealth. The

brittleness of the finding reminds me of the point made earlier about how the choice of assets studied could support endless tales about the egalitarianism of Tsimane' one wished to make.

Insert Figures 9.8A-9.8C

To assess trends in real values, I computed yearly growth rate for the three asset bundles (Table 9.12). The real value of livestock and commercial goods increased over time, but the real value of local artifacts did not change, and for some people it dropped. Livestock increased in value by 7% a year for women, men, and both. The real value of commercial goods rose by 5% for women and men together, yet it grew more for women (6%) than for men (3%). Local artifacts accounted for the smallest share of Tsimane' wealth, as just seen, and were on their way out. The real value of goods fashioned from handy materials shrank every year by 6% for women while barely changing for men or for the total sample.

Insert Table 9.12

Tsimane' reposit their mammon in livestock and commercial goods. The share stored in animals was larger and expanding faster than the share stored in commercial goods, yet both shares were growing. The aberrant year aside, like 2003 among women (Figure 9.7B), wealth kept in local artifacts was small and dwindling, a finding that rhymes with earlier results showing that, over time, the likelihood of owning most local articles and the number owned of such articles got smaller or hardly changed (Table 9.4, part B; Table 9.6, part B).

Owning and borrowing physical assets

To obtain assets they lack, unclubbable Tsimane' glom, but they more likely borrow, or take the asset and return it. Tsimane' like bogarting food, but not assets. During six years of the study we had the good sense of asking about the ownership of the 22 core assets, followed straightaway by a question of whether – for some of those assets – they had borrowed the asset the seven days before the interview. The second question was asked irrespective of whether the interviewee owned the asset. Something like this:

Question 1: *How many cooking pots do you own?*

Answer: One.

Answer: None.

Question 2: *In the past seven days, how many times did you borrow a cooking pot?*

Answer: Once

Answer: Twice

Questions about borrowing were confined to cooking pots, bicycles, canoes, fishing nets, rifles, shotguns, and mortars. The pair of questions were asked in the yearly surveys of 2002-2006 and 2008 of the longitudinal study and in the baseline of the randomized-controlled trial (2008). Though choppy, the data lets us judge if those without an asset borrowed to make up for the shortfall.

The results for the combined sample of women and men, shown in Table 9.13, aligns with what anthropologists studying pent-up rural societies would envision to find. Borrowing

erased asset deficits. In part A of Table 9.13 we see that people missing a cooking pot, bicycle, canoe, fishing net, firearms, or a mortar in their chest of assets borrowed the missing asset. For those without the asset, the probability of borrowing the asset went from a high of 38 percentage points [pp] for canoes, to a low of five percentage points for bicycles, with most of the other assets falling in the middle. The middling comprised shotguns (18 pp), fishing nets (16 pp), mortars (14 pp), cooking pots (14 pp), and rifles (13 pp). I doubt one could replicate the finding with useful quotidian assets in an industrial country or in any urban setting. Elsewhere humans don't routinely borrow from neighbors.

Insert Table 9.13

Though it fits with ethnographic expectations, the finding that those who lack lean on those who don't, should still intrigue us. In a community where people live next to neighbors they have known (or have known about) since childhood, neighbors who happen to be kin by blood or marriage, one can leave one's unlocked car with a key without fearing it will be taken away forever. Why own if you can borrow? With unchecked borrowing and mutuality, the main reasons for owning assets are convenience and the selfishness of others. When wanting to borrow a canoe from the only villager with a canoe, one might find the owner had left for a few days with the canoe. If other villagers turn selfish, one could follow the Zen way and abjure desire for assets, or one could give in to desire and get one's own asset. Even though one could borrow, private possession makes it easier to appease wants when villages become too large and one no longer knows what others feel, want, or do.

In the furtherance of understanding asset ownership and borrowing, parts B and C of Table 9.13 divide the sample between women and men to see if they differ in the likelihood of borrowing. Turns out women borrowed assets used by females (part B), men borrowed assets used by males (part C). Women cook and pound coarse foods in mortars; it follows they would be more likely, in percentage points [pp], to borrow cooking pots (21 pp; men 2 pp) and mortars (20 pp; men 0.14 pp). Men hunt and ride bicycles; makes sense they would be more likely than women to borrow a bicycle (7 pp; women 0.001 pp) or firearms (14 pp rifle; 19 pp shotgun). Asset deficits always predicted borrowing, with one exception: Women without firearms were unlikely to borrow rifles or shotguns, understandable since they do not hunt.

The chances of borrowing did not change over time for the total sample or for women (parts A-B). Men, also, saw no changes in the propensity to borrow, except for borrowing cooking pots and mortars. Among men, the chances of borrowing a cooking pot or a mortar contracted by one percentage point (pots) or two percentage points (mortars) each year. Does the fact that men were less likely to borrow female articles like cooking pots and mortars mean the sexual division of labor is ossifying, or does it mean the burden of borrowing cooking utensils has shifted to children?

Discussion and conclusions

Methods. To probe material wealth, surveyors asked about and valued a set of physical assets. Ethnohistorical understanding of Tsimane' helped to identify the assets, most of which have long been serviceable to Tsimane'. Every year, enumerators queried all adults in the same villages about the quantity of selected assets they owned and, in community surveys, enumerators asked storekeepers and village leaders about asset prices.

[a] *Shortcomings*. A capacious concept, wealth encompasses more than privately owned material goods. It includes timber trees in village commons waiting to be cut, houses, farmland, health, financial instruments, debt, net worth, knowledge, seeds, ritual paraphernalia, and cobwebs of kin. We measured a narrow slice of wealth, and even then we missed counting apparel and found no practicable way of judging the age or quality of assets. Applying a broader definition of wealth might have made it easier to compare our results with the wealth of industrial nations. Might. I doubt the effort would have paid off because of fresh mistakes from measuring more things and because some of the items that embody wealth in industrial nations, like real estate and financial instruments, do not turn up in autarky. Local prices were used to compute monetary values. In places with shapeless markets and fuzzy prices one cannot robotically attribute a price to an asset. To avoid misprision, I spelled out the steps I took when attaching the best possible price to the asset, but noise still permeates my estimates of asset values. Imposing one price to any hen - young, sick, or old - is wrong, until you rate feasible alternatives. Last, the focus on individual adult wealth means I have nothing to say about household or *per capita* wealth. It also means I overstate the amount of inequality compared with household-level measures.

[b] *Merits*. Among Tsimane', with their old, clear-cut feelings for private property, one does better by studying what every adult owned rather than by studying the wealth of household, or the average wealth of all people in the household, including children. Asking adults about the assets they own produces fewer mistakes than asking them to tally the assets owned by all adults in the household. The estimate for the household will requires assumptions about how to count and statistically weigh females and males of any age before apportioning aggregate household wealth between household members to obtain a measure of wealth for each person. Household and *per capita* wealth have double noise. Measuring wealth at the household level makes sense when, as in industrial countries, most wealth is fastened to a moated dwelling, a household public good. But when dwellings are brittle and fleeting, as they are among Tsimane', and when people within and between households borrow each other's assets, the drive to measure household wealth becomes less compelling.

Our method of data collection had one other advantage. In our catholic approach to sampling all adult villagers were canvassed, not just the wealthy, poor, or those in between.

Quantity of assets: Amount and inequality

[a] *Amount*. No good was owned by everyone, or almost everyone. Even if we leave aside public goods of the household like mosquito bed nets or cooking knives, or goods earmarked for one sex, we are left with an asset poor society. Thirty percent of adults did not own footwear, half did not own hens (Table 9.3B). Some goods like mosquito bed nets, cooking knives, cotton carrying bags, and fishing hooks 70% of adults owned while other goods, like watches or luxuries, fewer than 13% of adults owned. Definitions do not matter. It does not matter whether villagers put cell telephones, televisions, and bicycles to practical uses, or whether they use them to brag - few owned them.

Tsimane' do not hoard physical assets. When they owned an asset, they owned one. Nordenskiöld found the same a century ago. Cotton carrying bags and livestock differed. Someone who owned cotton carrying bags, cattle, ducks, or hens owned a median of two or, as with hens, three.

The caducity of man-made goods in the tropical rain forest would make anyone shun hoarding. An environment full of indomitable termites and downpours where everything rots

and rusts fast would make most of us eschew the material. Not a Zen yearning for simplicity, but climate caps what can be kept. When, to weather, we add the unspoken claims other villagers have on one's belongings, the impetus to pile up vanishes. Tsimane' could make as many huts, dugout canoes, cotton bags, and mortars as they wished, in the comfort of their home, whiling away work as they sip fermented beverages with kin. They could, but don't.

[b] *Inequality: Gini coefficients of quantities.* In the previous section we used simple measures to describe asset inequality. Turning to the Gini coefficient, a formal measure, buttresses what we just saw. Depending on the asset chosen, one could find negligible or sizeable inequality among Tsimane'. If we wanted to stress the egalitarianism of Tsimane' we would pick mosquito bed nets, knives, and cutlasses, which had Gini coefficients of 0.36, 0.41, and 0.45; if we wanted to underscore inequality we would pick livestock (other than hens), bicycles, watches, hand mills, canoes, and querns, all with Gini coefficients near or over 0.90 (Table 9.7A).

Value of assets: Amount and inequality

[a] *Amount.* The challenges of finding valid asset prices puts one on looser ground when describing asset values or inequality in asset values. The inflation-adjusted gross private asset wealth of an adult in a year reached \$612^{viii}. Figure 9.7A shows that 77% of asset wealth was locked up in livestock, 15% in commercial wares, 7% in articles molded from local materials. Though accurate, the percentages mislead for they make Tsimane' look like herders. The percentages, while true for what they purport to show, uncover the weakness of estimates from small samples in which a few people owning expensive belongings exert disproportionate leverage on the rest. To highlight the point, I re-drew Figures 9.7A-9.7B by taking out some costly livestock, like cows and pigs. I could have dropped other high-end assets like firearms, canoes, or bicycles, but the exercise buttresses my point, which is that tales about how Tsimane' store privately owned wealth, like other tales, is susceptible to what we include in the basket of assets. If we leave in hens while taking out other livestock, the share of wealth kept in commercial wares jumps from 15% to 67% while the share of wealth stored in locally-made goods quadruples from 7% to 30%.

[b] *Inequality: Gini coefficients of assets measured with money.* The Gini coefficient of inequality in the monetary value of all 22 assets, for all years and for both sexes together, reached a modest 0.34, near previous estimates of asset inequality among Tsimane'^{ix}. Gini coefficients varied by asset bundle. The Gini coefficient of commercial asset values (0.60) topped the Gini coefficient of locally-made assets (0.53), and was twice as high as the Gini coefficient of livestock (0.33)(Table 9.11). Attaching monetary values to assets makes it possible to sum different assets and arrive at a measure of inequality writ large, which the earlier approach relying on quantities could not do. Using monetary values to compute asset inequality still leaves us with the nagging finding that inequality varies a lot by the assets chosen. The Gini coefficient of asset inequality doubled as we go from livestock (0.33) to all assets (0.60).

Trends over time. I see growing affluence without growing inequality, a worthy achievement in a world putatively sundered by widening economic disparities. Table 9.4 shows that the chances of owning eight of the 22 core assets (e.g., cutlasses, mosquito bed nets) grew each year; the chances of owning three assets (querns, pigs, ducks) contracted, while the chances of owning everything else showed no appreciable change. Not only were Tsimane' more likely to own assets, they were more likely to own more of them (Table 9.6). Every year, the quantity

owned of axes, cutlasses, mosquito bed nets, fishing nets, hens, and swine grew, the quantity of cattle owned decline, while the quantity of other assets owned did not change. Thus, Tsimane' are becoming asset rich, albeit starting from a low ground and in an uneven way. Nowhere do I see tight evidence that Tsimane', on average, are becoming asset poor.

Besides becoming asset richer, Tsimane' have managed to rein in asset disparities. Of the 22 core assets, seven (mostly commercial wares) saw a reduction in the yearly Gini coefficients of asset quantities. Six assets, evenly split between locally-fashioned goods, commercial wares, and livestock saw growing Gini coefficients of asset quantities, while the rest showed no detectable yearly change in Gini coefficients (Table 9.8). The yearly Gini coefficients of assets measured with monetary values provides almost unchallengeable evidence of no change in inequality (Table 9.11). The Gini coefficient of all goods, of commercial wares, and of livestock barely changed across the nine years of the study. Only the Gini coefficient of livestock changed, and in this case, it changed by a positive 5.1% per year.

In the previous section we said the Gini coefficient of asset inequality reached 0.34. If Tsimane' are becoming richer in assets as shown by their growing proneness to own assets and to own more of them, their Gini coefficient of asset inequality should be falling. It is not; in fact, it remained flat, close to zero, at 0.3% per year (Table 9.11). Why can't one spot changes in the expected direction, or in any direction? Three answers come to mind. Moderate albeit indurate inequality has already arrived to the homeland of Tsimane'; if nothing changes hardened inequality however small or large the inequality, there is no change to see. Or perhaps microscopic changes in inequality are unspooling, but our small sample and short study blinds us from seeing these movements. More prosaically, blame mistakes in the measurement of quantities and prices for flattening the trend lines.

Comparison between women and men. On average, in a year, women had a third (2758 bolivianos) of men's wealth (8066 bolivianos)(Appendix A). However, three features hobble the comparison. First, most of the assets we measured were household public goods; anyone in the family of the right age or sex could use them. We had a few signature private goods, meaning one and only one adult could use them. Second, several assets had a gender label; only one sex was expected to make, own, or use the asset. Last, couples co-owned some assets because they had split the costs. This leaves us with four private belongings to probe asset ownership between the sexes in a reliable way: footwear, watches, cell telephones, and livestock. Over these goods people enjoyed non-transferable individual usufruct rights.

Figure 9.1C and Tables 9.3C-9.3D show adult women still did worse than men in the likelihood of owning assets. Compared with men, women were 25 percentage points (pp) less likely to own footwear; they were also less likely to own watches (23 pp), cell telephones (5 pp), cattle (4 pp), and swine (2 pp). Only with the ownership of hens did women fare better, being eight percentage points more likely to own hens than men. For three of the four assets, the quantity of assets owned by women and men did not differ (Table 9.6). Only with livestock ownership does one see differences, and even then the difference appeared only with cattle. Women owned 29% fewer heads of cattle than men; absent were notable differences between the sexes in the quantity owned of other livestock.

Earlier we said inequality in the quantity of assets owned among women was higher than inequality in the quantity of assets owned among men; this was true of most assets. If we restrict the analysis to canonical private rather than household belongings, the conclusion needs tempering. Unfortunately we do not have longitudinal data on footwear or cell telephones, and

data on wrist watches was too scanty among women to estimate yearly Gini coefficients (Table 9.7B). This leaves us with domesticated animals as the ideal asset bundle to examine inequality between the sexes. When we examine the Gini coefficients of asset quantities in livestock (Tables 9.7B-9.7C) we do not see trenchant contrasts between women and men. Women had slightly higher Gini coefficients of cattle and swine ownership (cattle = 0.98; swine = 0.93) than men (cattle = 0.96; swine = 0.91), while men had a somewhat higher Gini coefficient of hen ownership than women (0.72; women = 0.67). Women and men had the same Gini coefficient for duck ownership (0.97). Overall, I do not see a coherent conclusion about sexual disparities in animal ownership.

If we return to the way we initially defined the three asset bundles and measured Gini coefficients of asset values, we again find women and men differed in the inequality of some assets but looked alike in the inequality of other asset bundles. The Gini coefficient for all assets and for livestock was slightly larger for men (total = 0.18; livestock = 0.17) than women (total = 0.15; livestock 0.14) (Figure 9.6; Table 9.11). Net differences in these inequalities are too small to make much out of them. Nevertheless, the Gini coefficient of inequality for the value of commercial assets was larger among women (0.57) than men (0.42), while the Gini coefficient of inequality for the value of locally-made goods was 50% higher for men (0.60) than women (0.40).

Like so much else in this chapter, a hazy picture emerges in telling a taut story of asset inequality between the sexes. Livestock inequality did not differ much between women and men, and while larger asset bundles showed some differences, these do not tell a well-rounded story. Men had more inequality in the monetary value of locally-fashioned articles while women had more inequality in the monetary value of commercial wares. Inequality in the value of all core assets was about the same for women (0.15) and men (0.18). Put it all together, and it makes sense: women had more inequality in one bundle, men in the other, and they had the same inequality in the third bundle, livestock. Combine the three bundles, and you end up with about the same Gini coefficients of inequality in all assets for women or men.

The Gini coefficient of all asset values for women had more variability than the Gini coefficient for men. During 2002-2010, the coefficient of variation for yearly Gini values was 0.28 for women and 0.19 for men (Table 9.11). Less set than men's Gini coefficients, women's Gini coefficients had a clearer trend over time. In fact, asset inequality among women declined every year by 5.95% for all assets, by 2.6% for commercial assets. Asset inequality among men also contracted every year, but by half the amounts: 2.3% for all assets and 1.3% for commercial assets. Inequality in the ownership of locally-made assets rose for women and men by the same yearly amount (~3%). Computing separate growth rates of inequality for women and men adds nuance to the inequality trend for all adults discussed earlier. Results cleaved by sex suggest that from one year to the next, women saw less and less inequality in many types of assets while men also saw improvements, but of a more modest sort. Possibly, inequality computed for the pooled sample of all adults remained flat at a paltry rate of 0.35% per year (Table 9.11) because of women's role.

Two other findings about inequality. First, women kept a greater share of their wealth stored in locally-made artifacts (11%; men = 6%) while men kept most of theirs in commercial articles (18%; women = 9%) (Figures 9.7B-9.7C). Once we exclude expensive livestock and ducks but leave in hens, contrasts become stark: women kept half of their wealth stored in locally-made articles while men kept three-quarters of their wealth in industrial goods. This should not surprise one as [Chapter 7](#) and this chapter have shown men have more access to cash

and more chances of buying commercial assets. Second, an adult who lacked an asset borrow one, but the likelihood of borrowing was higher for assets appropriate to the borrower's sex. Women without cooking pots and mortars to pound food were more likely than men to borrow these goods; men *sans* bicycles or firearms were more likely than women to borrow rifles, bicycles, and shotguns (Table 9.13). Leave aside articles proper to one sex, and you see that even with articles both sexes could use (e.g., canoes) men borrowed more than women.

Conclusions. Today many of us pay attention to wealth and wealth inequality because we think the first is good, the second bad. By selling or consuming assets in abject times, those with assets thole better than those without. In chancery, villagers with riches can sell livestock or tools to survive and start again from a lower floor. Besides serving as a bridge over misfortune, assets provide psychological onanism. Until they dispose of assets, asset owners gain quiet pleasure from quiet ownership as they witness how neighbors react to their belongings. Seneca said nobody puts out their finest silverware and raiment when eating alone; pleasure comes from watching others react to one's mammon (quoted in Undurraga et al., 2016, p. 18). Economic inequality is bad because it presumably harms the commonwealth as it undermines institutions delivering public services, and it damages the psyche as it spawns grievance and fury. Many care about wealth and wealth inequality because of what they do, not because of what they are.

Solving the riddle of what they do brings us back to the causes of wealth and wealth inequality. In this chapter I skip over these mighty themes and stress basics. On purpose I say nothing about consequences and only a little about predictors. Some of the variation in wealth and inequality I trace back to the subject's sex and survey year and, with inequality, I tell the story of how inequality varies by the goods inside the asset bucket. The narrow focus on one ethnic group and one place and all adults allows me to brush aside concatenated vanilla predictors of wealth inequality, such as ethnic, institutional, historical, political, and geographical diversity.

I have a reason for going back to basics. Before tracing the causes and consequences of wealth and wealth inequality we need to answer a dull question: How do we measure unadorned asset wealth in a rural economy without or with embryonic markets? The query deserves an answer because from ancient times to the present people have seen Edenic egalitarianism in small-scale, non-industrial societies. The eighteenth-century Scottish political economist James Steuart discussed in [Chapter 2](#) spoke of "unpolished" primitive societies characterized "by a great simplicity of manners". Contemporary researchers and lay observers keep underscoring the economic egalitarianism of small-scale, non-industrial societies (Smith et al., 2010). To compare wealth inequality between societies across time and place, measures of wealth need to be standardized. Measurement is everything when judging the economic egalitarianism of non-industrial societies. Non-industrial societies might well have less economic inequality than other societies, but one should suspend judgement until one gets the right measures and the measures right.

In moving the agenda forward we start by acknowledging the nescience of wealth in non-industrial societies and of wealth inequality in all societies. I am not sure we know how to measure the right things to compare wealth between societies. As others have noted (Borgerhoff Mulder et al., 2009; Kaiser, Hruschka, & Hadley, 2017), in small-scale, non-industrial societies wealth is lodged in different stocks: social relations, natural resources, health, knowledge, skills and goods like seeds, tools, livestock, clothing, and amulets. Even if we knew how to measure,

value, and combine all the stocks, we would need to adjust for debts owed to others, and decide whether wealth measures refer to adults, any person, the family, the band. We would need to decide what assets to include to make fair comparisons between the sexes and age groups. We would need to adjust for the quality and age of goods. And what would all this add up to in a kin-based fellowship with much borrowing, a well-defined sexual division of labor, and, in consequence, many material goods bolted to one gender? The empirics are challenging even if we restrict ourselves to goods with private rights of use.

Go to industrial societies and the challenges do not vanish, they merely change. We no longer have to consider natural resources in the commons, and, for the most part, we no longer have to fret about seeds or amulets, but we now have to ponder a dizzying medley of financial instruments and financial liabilities and the value of real estate. The task of how to adjust for household composition, or how to apportion the value of household net worth between people in the households remains.

Even if we measure the right thing in different societies – or precisely because we succeed in honoring cultural specificity when measuring wealth - we would forfeit the ability to compare and generalize because specificity is the nemesis of generalization. Nothing new here. The topic has been well-rehearsed when discussing valid measures of income and many other topics across societies. But what might be slightly new here is having taken the trope of the tradeoffs between, on the one hand, respect for time, culture, and place versus the ability to generalize and adapting the bromide to the measure of wealth and wealth inequality.

Flaws in wealth measures contribute to flaws in wealth inequality measures. Unlike income inequality, less is known about wealth inequality (Cowell et al., 2019). Having defined wealth in a small-scale non-industrial society one can easily compute measures of wealth inequality, as we have done in this chapter^x. By themselves, the measures are informative for the cultures from which they came. But can one compare results with inequality measures from industrial nations? Yes, but only to obtain doubtful answers.

Here is an example. The best and most recent data on country wealth (not income) inequality I found comes from research by Cowell et al. (2018, p. 336), who measured Gini coefficients of wealth inequality in five industrial nations: Italy (0.60), UK (0.66), Finland (0.68), USA (0.80), and Sweden (0.89). To measure wealth they used the value of household real estate, financial assets, and financial liabilities. Where do Tsimane' stand next to Europeans? Table 9.11 shows the answer depends on the asset bundle chosen, but, irrespective of the bundle, Tsimane' come across as very egalitarian. The Gini coefficient for asset wealth among Tsimane' ranged from 0.33 for livestock to 0.53 for locally-produced goods, with a peak 0.60 for commercial goods. The overall Gini coefficient for all years and for all asset types combined was 0.34, half the size of the most egalitarian society in the European sample (Italy = 0.60). This much supports the orthodoxy that small-scale non-industrial societies are egalitarian. Even with the largest Gini coefficient found among Tsimane', the one for store-bought goods (0.60), Tsimane' would tie with Italians as the most egalitarian society. But suppose we had decided to tell the tale of wealth inequality using the Gini coefficient of axe ownership (0.69), fishing nets (0.82), or cooking pots (0.87) (Table 9.7A). Tsimane' would tie Swedes as having the most wealth inequality. The problem, as I see it, is that we are comparing our apples with their oranges. Their Gini and our Gini have different ingredients, and we it is who decide what ingredients to put in the wealth basket. Unless and until we standardize the measure of wealth across societies it will be difficult to compare inequalities validly, though comparisons can be made, as just done.

I conclude with two points. First, measures of wealth and wealth inequality change quickly by what we include, even if what we include are straightforward material goods like fowl and tools. The measures, and the narratives they yield, vary, as well, by the subject's sex and by the year of measurement. Estimates of wealth and wealth inequality are almost whatever one wishes them to be. Second, with so much noise in the measure of wealth and wealth inequality in non-industrial societies, and with so little understanding of the exogenous variation of these two economic outcomes, we are not at present well-positioned to tell a sure tale about what wealth or wealth disparities do to individuals or groups. In the study of wealth, analysis has run ahead of measurement. We need to agree on basics before taking on cross-cultural comparisons.

Fig. 9.1A. Percentage of total sample of Tsimane' adults (obs=5452) who owned various types of assets included in the yearly survey of wealth of privately-owned goods, 2002-2010

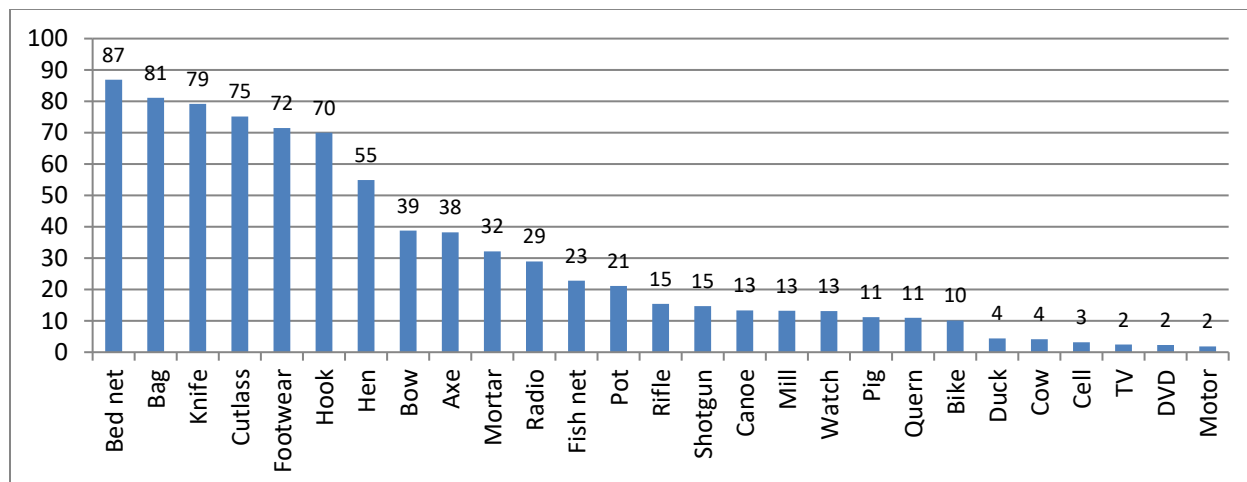


Fig. 9.1B. Comparison of share of adult Tsimane' women (obs = 2799) and Tsimane' men (obs = 2653) who owned various types of physical assets included in the yearly wealth survey, 2002-2010

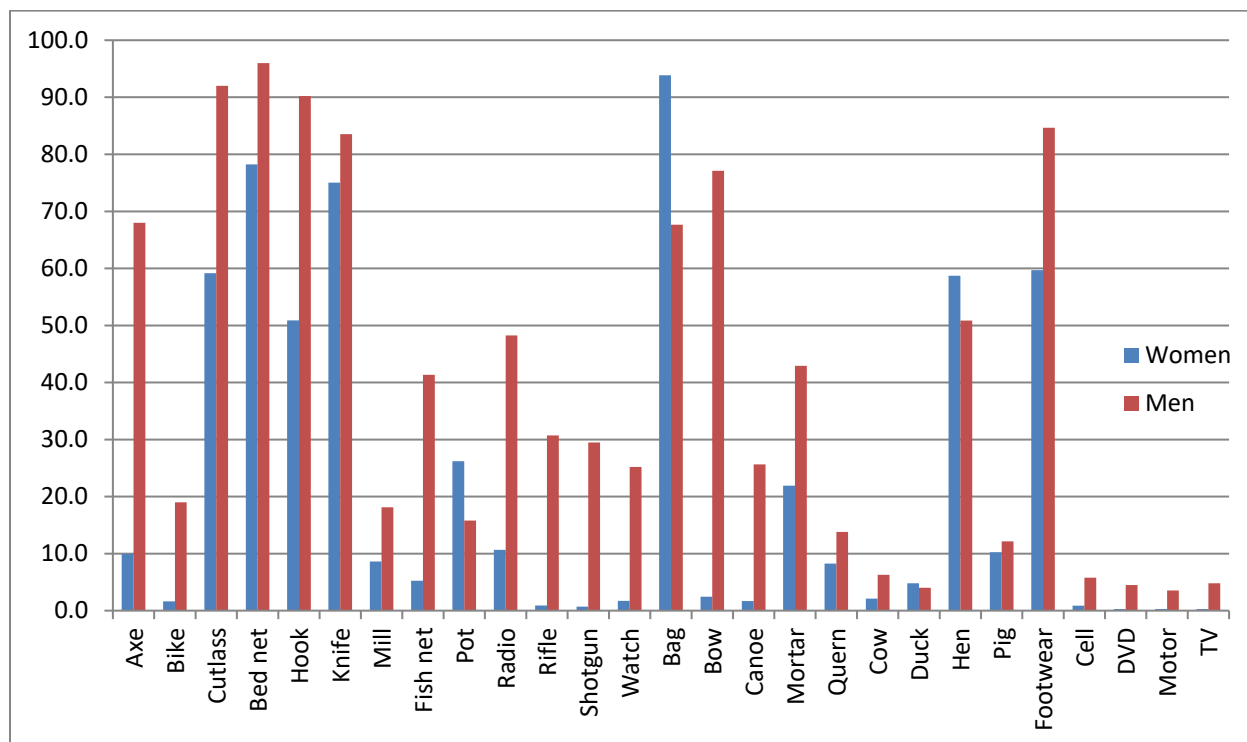
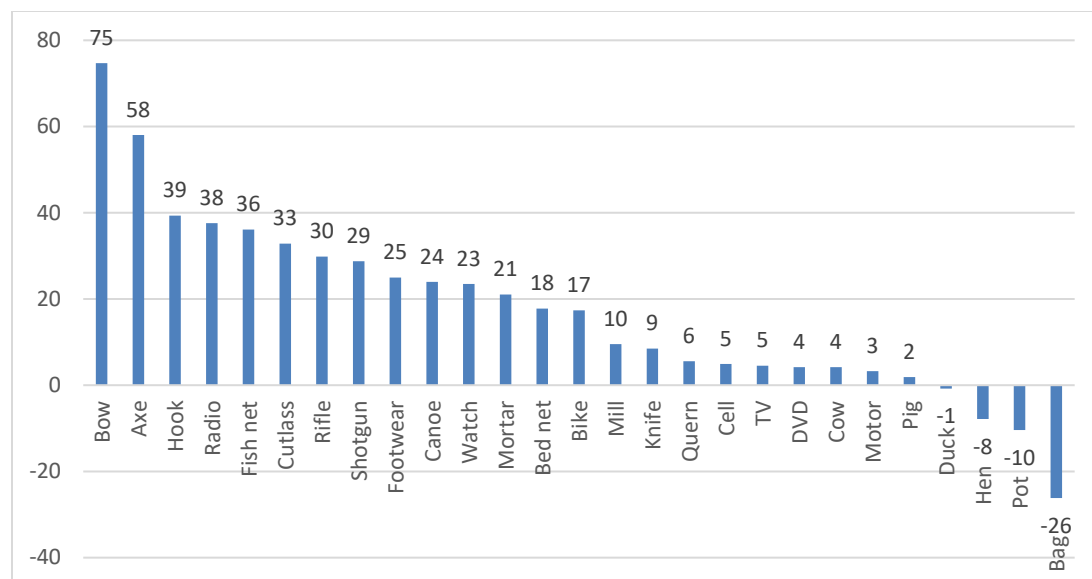


Fig. 9.1C. Percentage-point difference in the share of Tsimane' men minus the share of Tsimane' women who owned various types of assets included in the yearly wealth survey of privately-owned goods, totals for 2002-2010



Source:

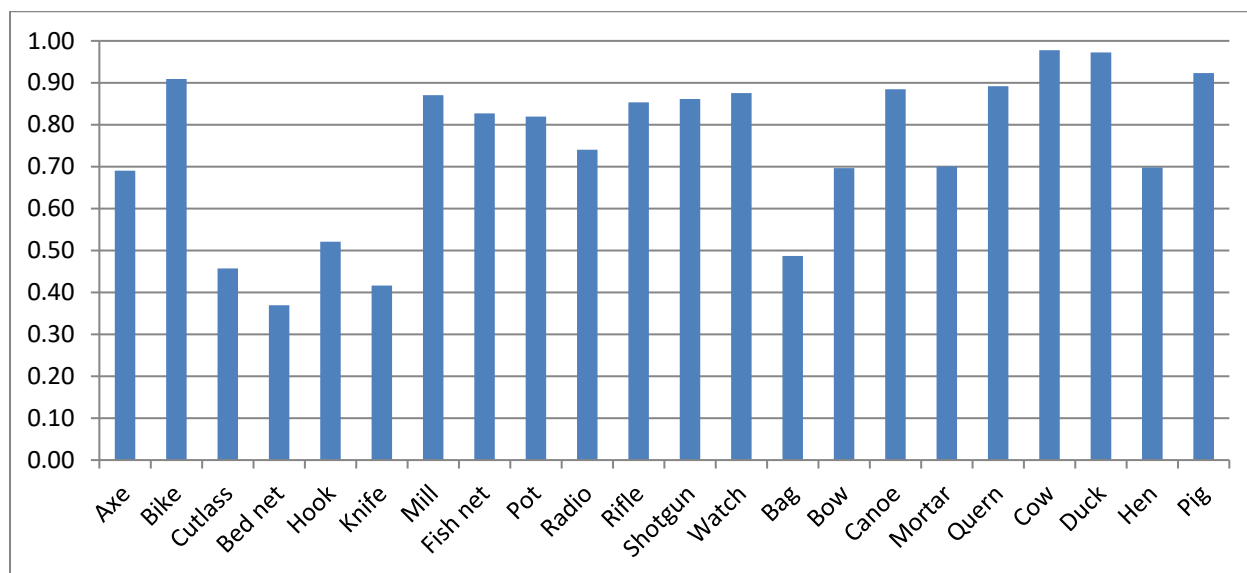
Fig. 9.1A. Based on totals (2002-2010) from Table 9.3B. Data comes from yearly surveys of adults age ≥ 16 years.

Fig. 9.1B. Based on totals (2002-2010) for women and men from Table 9.3C-D.

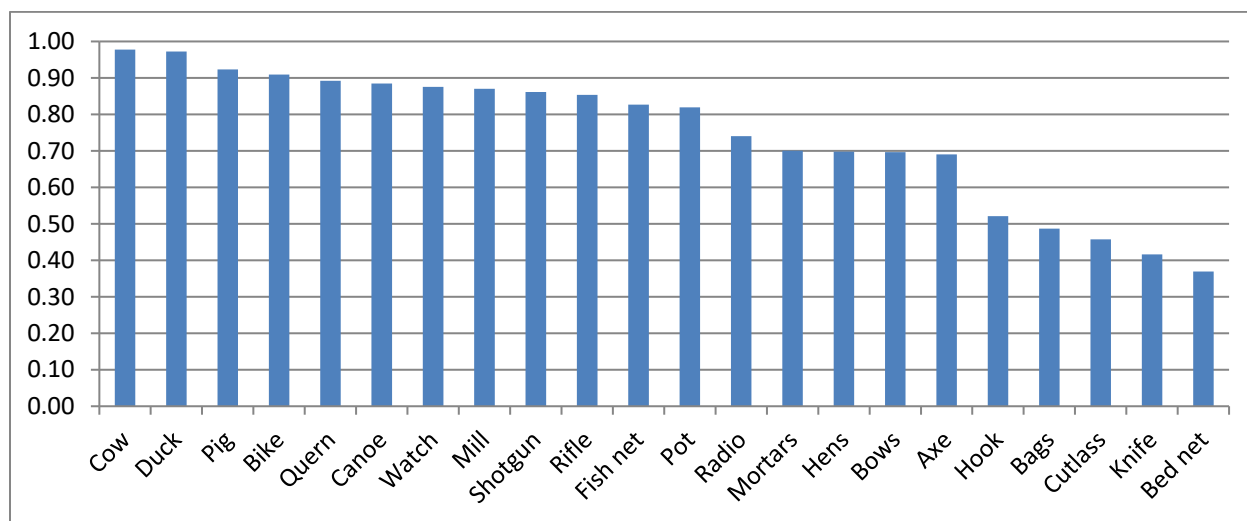
Fig. 9.1C. Difference in the total share of men (Table 9.3D) minus the total share of women (Table 9.3C) owning different assets. Total refers to combined figures for 2002 through 2010, inclusive.

Figure 9.2. Gini coefficient of inequality of asset quantities for entire TAPS sample, 2002-2010, pooled across all nine years and both sexes (section A) and ranked by size of Gini (section B)

A. Gini coefficient pooled across all years and both sexes



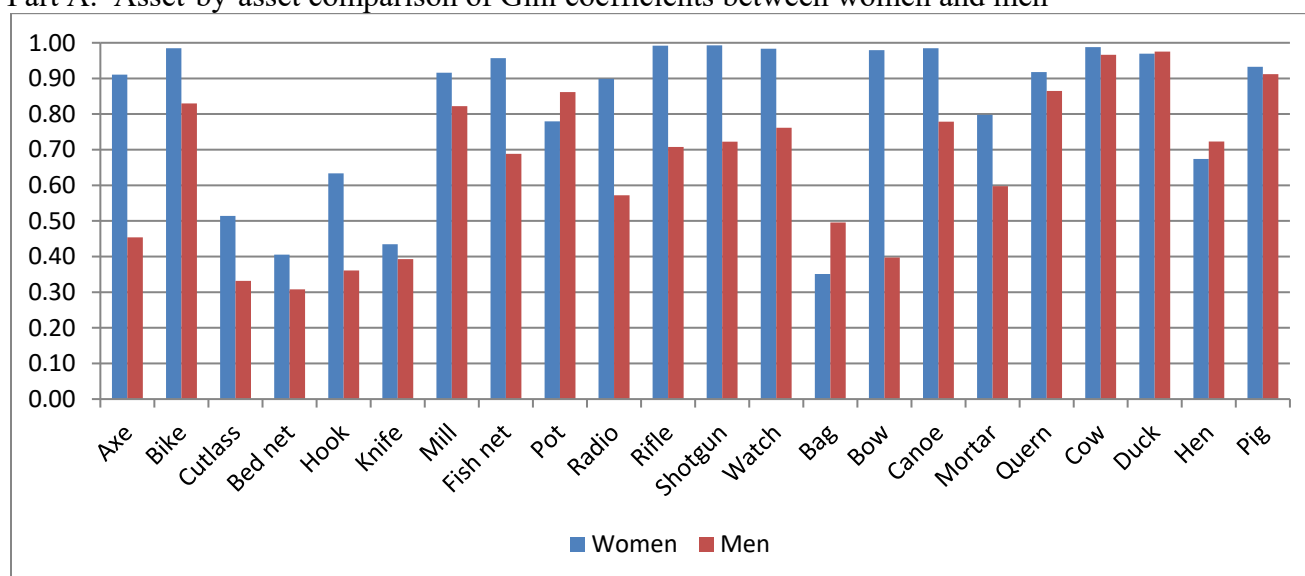
B. Gini coefficient from section A ranked by size, from largest to smallest



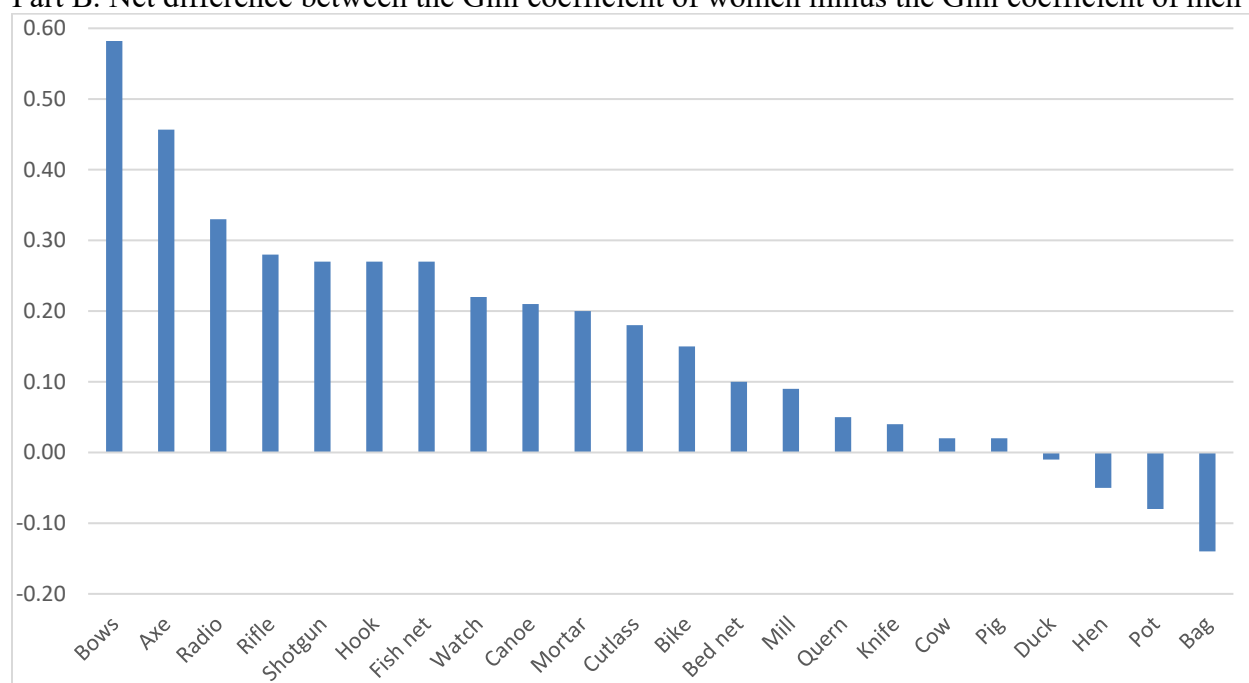
Source: Figure 9.2A based on column "Totals" from Table 9.7A.

Figure 9.3. Female-male comparison of Gini coefficients of inequality in the quantity of assets owned: Results pooled across all nine years for women and men, TAPS, 2002-2010

Part A. Asset-by-asset comparison of Gini coefficients between women and men



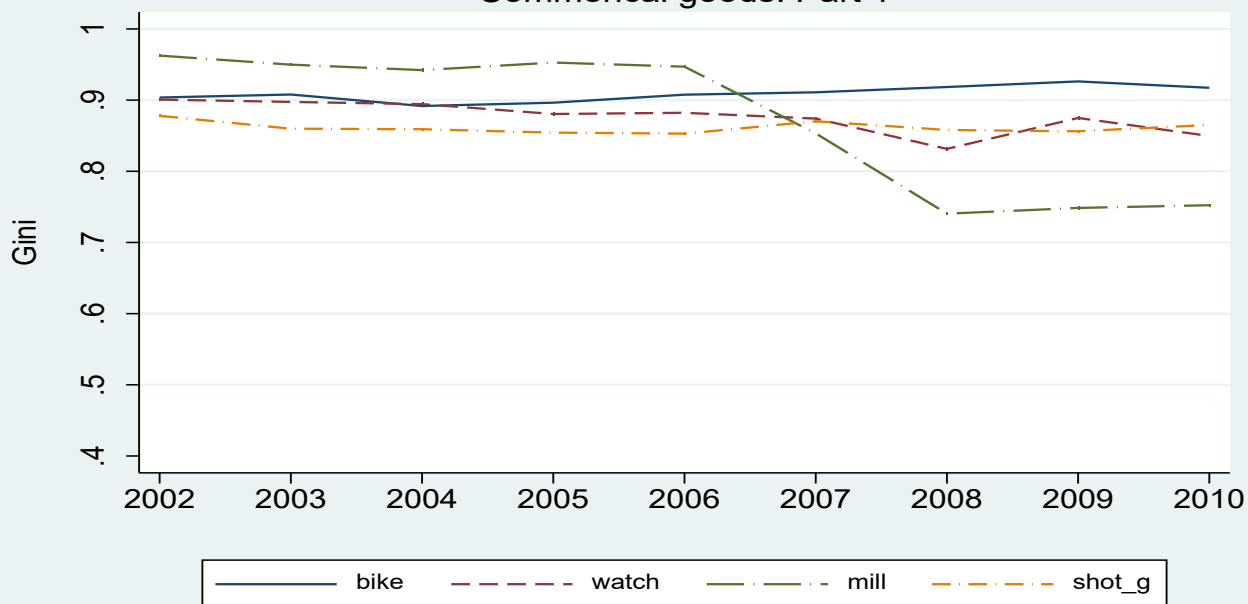
Part B. Net difference between the Gini coefficient of women minus the Gini coefficient of men



Note: Figure 9.3A based on column for totals from Tables 9.7B (women) and 9.7C (men). Figure 9.3B is the difference in the Gini coefficient of women minus the Gini coefficient of men, with numbers culled from Tables 9.7C-9.7B. The difference is Gini points.

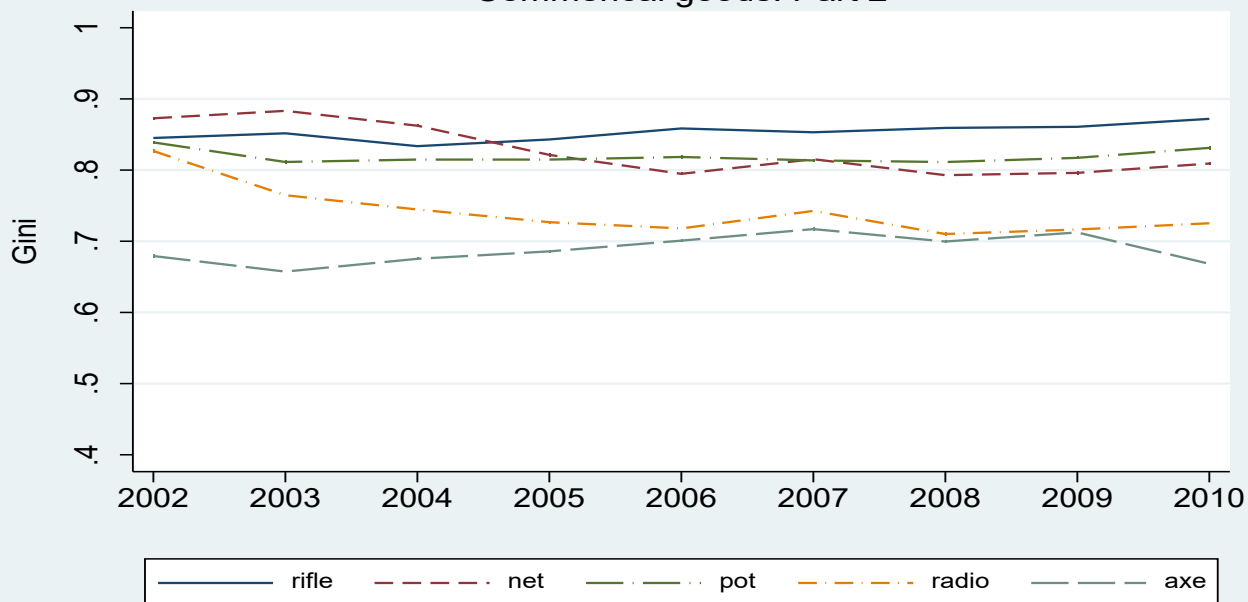
Source: Find under Tables, in "Corrected Table 9.7"

Figure 9.4A. Yearly trend in Gini coefficients, 2002-2010 (TAPS):
Commerical goods: Part 1



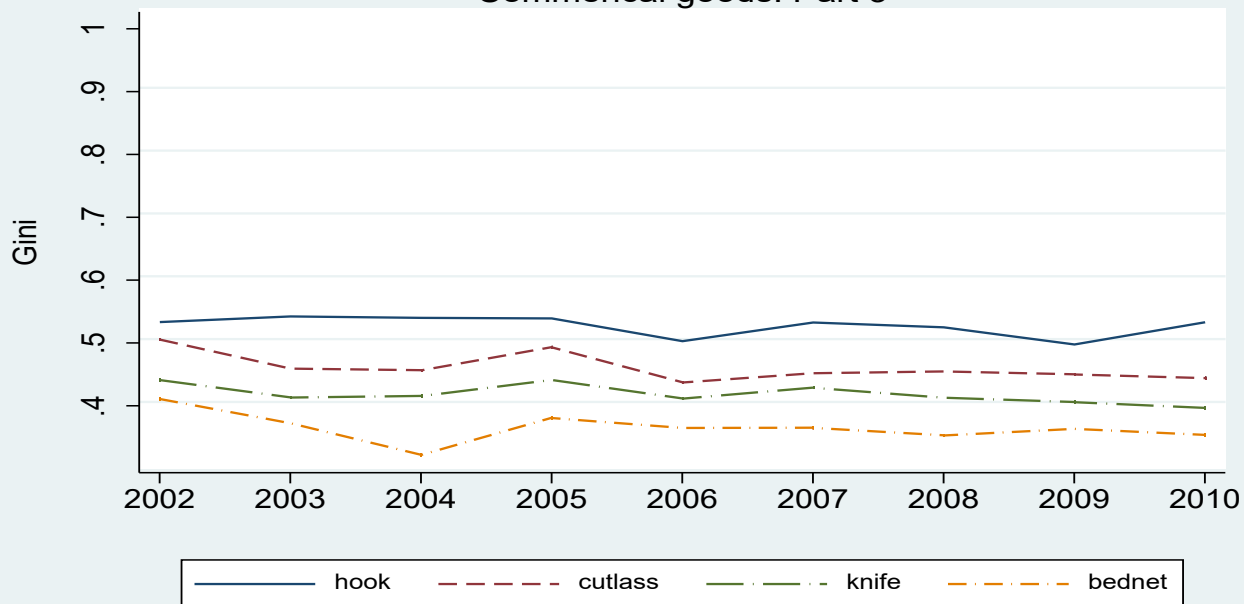
Source: Totals from Table 9.7A; growth rates are in Table 9.8.

Figure 9.4A. Yearly trend in Gini coefficients, 2002-2010 (TAPS):
Commerical goods: Part 2



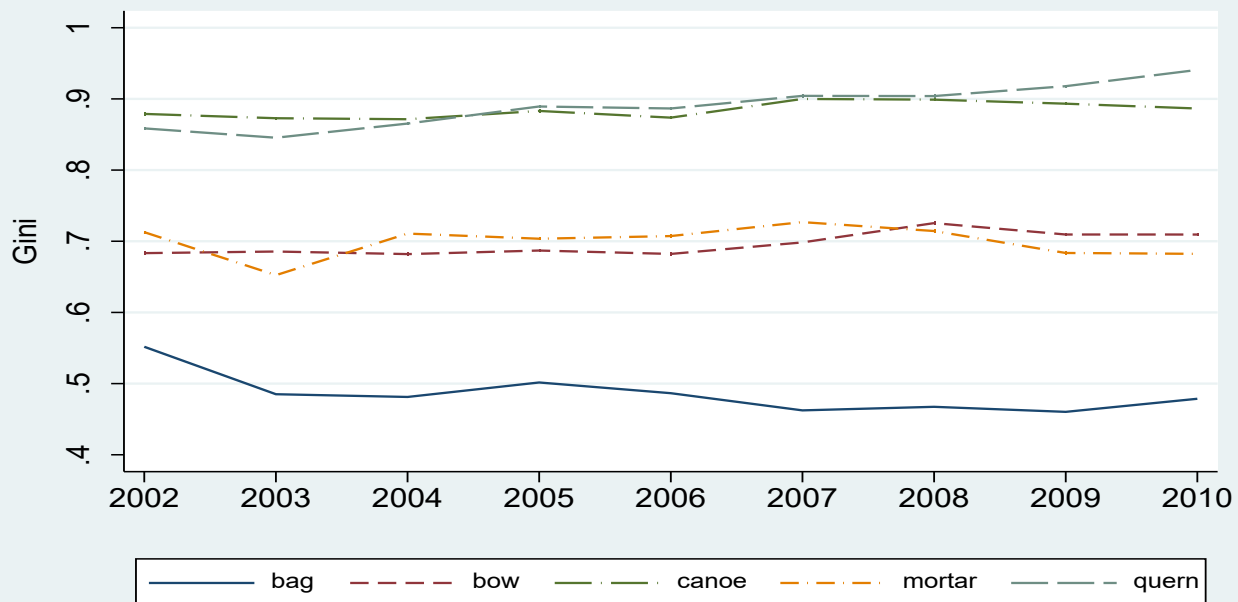
Source: Totals from Table 9.7A; growth rates are in Table 9.8.

Figure 9.4A. Yearly trend in Gini coefficients, 2002-2010 (TAPS):
Commerical goods: Part 3



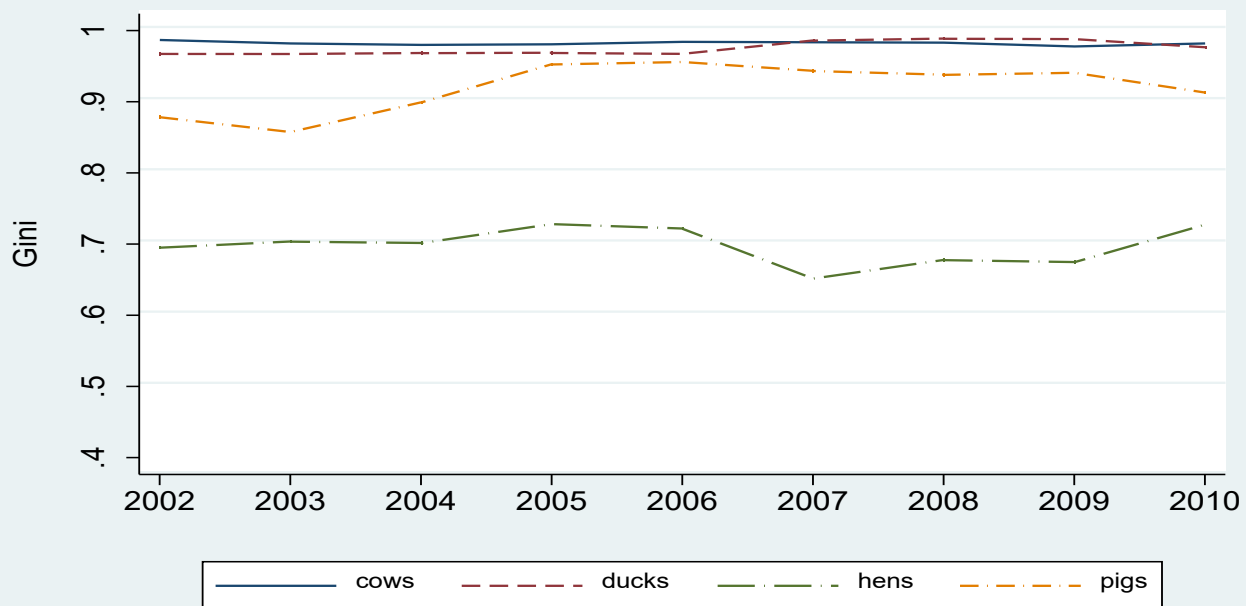
Source: Totals from Table 9.7A; growth rates are in Table 9.8.

Figure 9.4B. Yearly trend in Gini coefficients, 2002-2010 (TAPS):
Goods made from local materials



Source: Totals from Table 9.7A; growth rates are in Table 9.8.

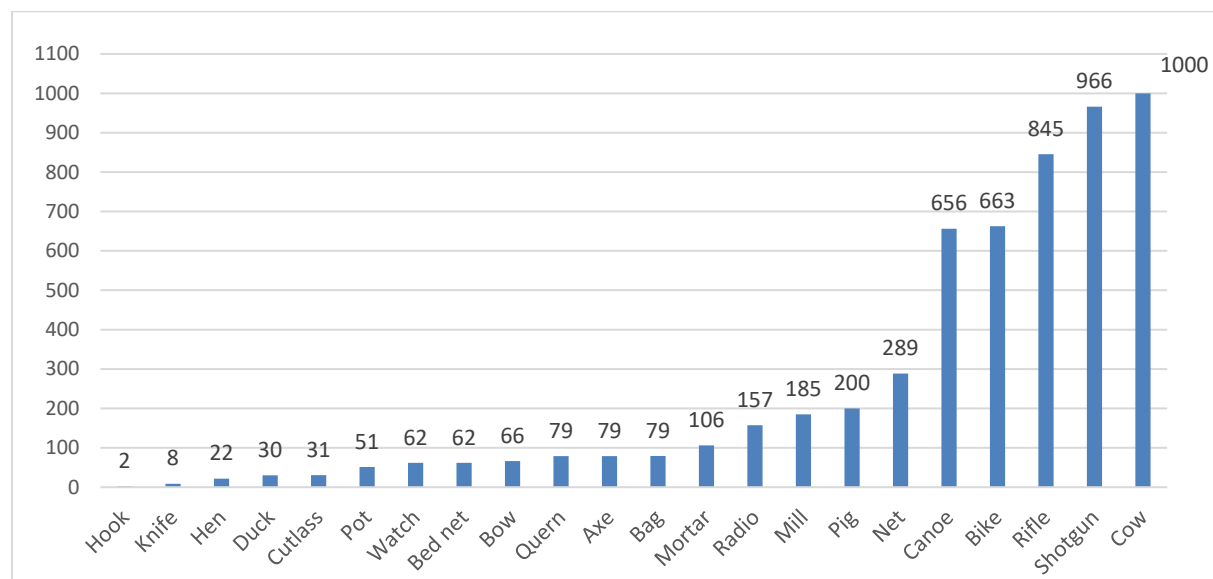
Figure 9.4C. Yearly trend in Gini coefficients, 2002-2010 (TAPS):
Livestock



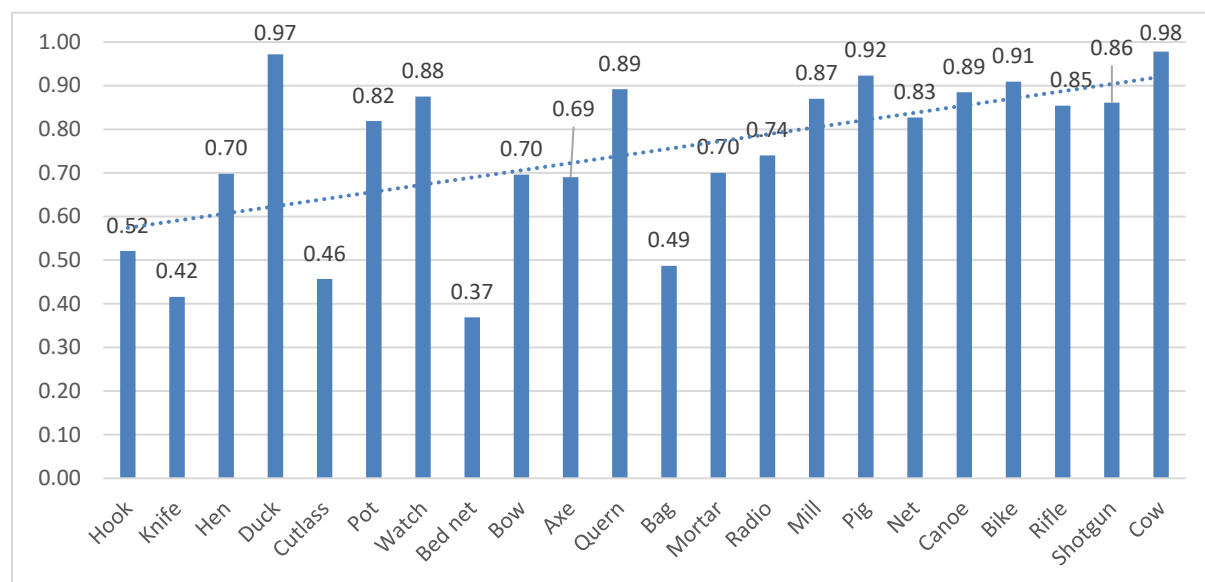
Source: Totals from Table 9.7A; growth rates are in Table 9.8.

Figure 9.5. Relation between Gini coefficient of asset inequality and asset real price

Part A. Median real price per unit in *bolivianos* of 22 core assets measured annually, 2002-2010, ranked from lowest to highest price



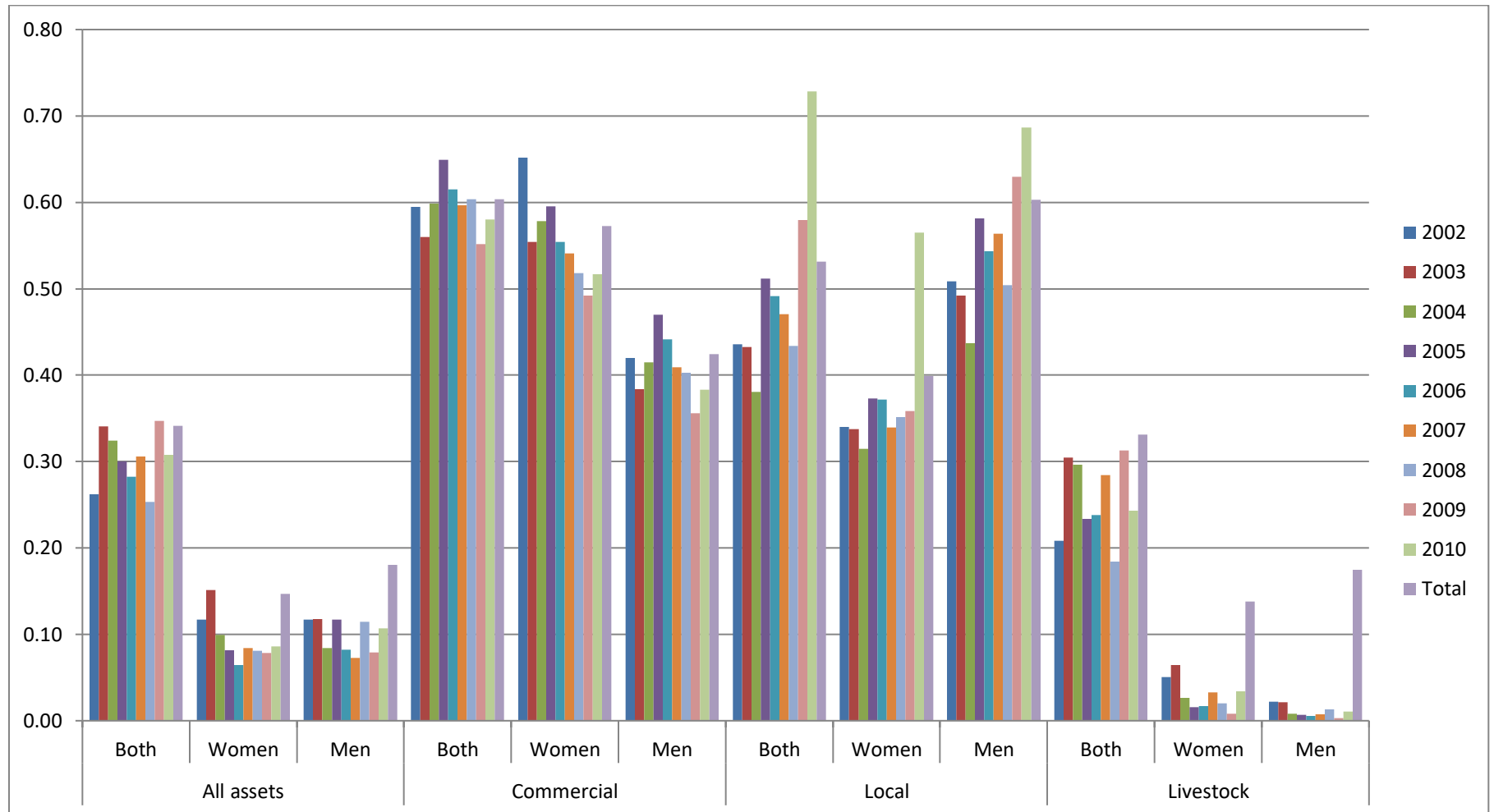
Part B. Gini coefficient of asset inequality for entire TAPS sample, 2002-2010, pooled across all nine years and both sexes



Note: Part A. Prices deflated by Bolivia's Consumer Price Index (CPI) from the Central Bank. See [Chapter 8](#) for source of CPI. For estimation of prices, see text. Part B is based on total from Table 9.7A.

Source: See explanation in Appendix B.

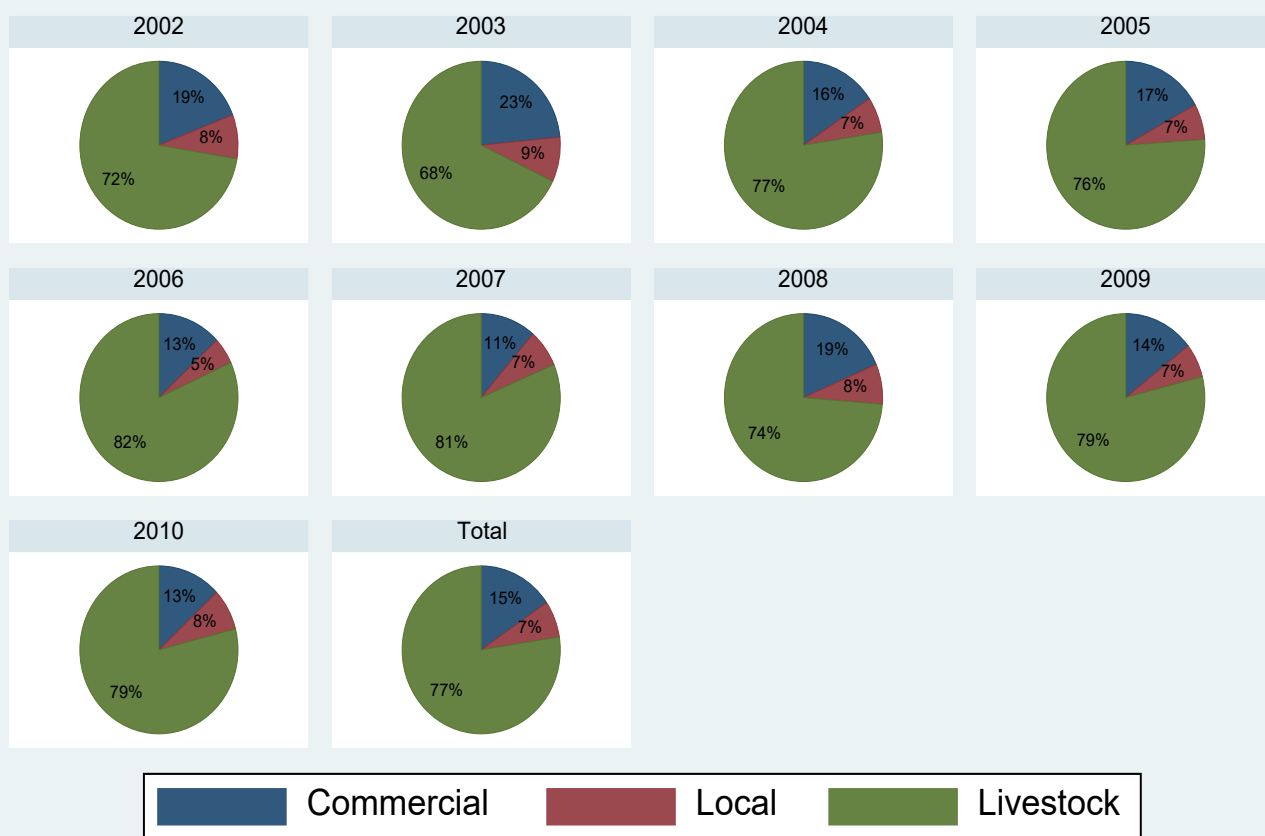
Figure 9.6. Gini coefficients of inequality for core assets measured with monetary values. Assets owned by Tsimane' adults (age \geq 16 years) surveyed yearly in the longitudinal study (TAPS), 2002-2010



Note:

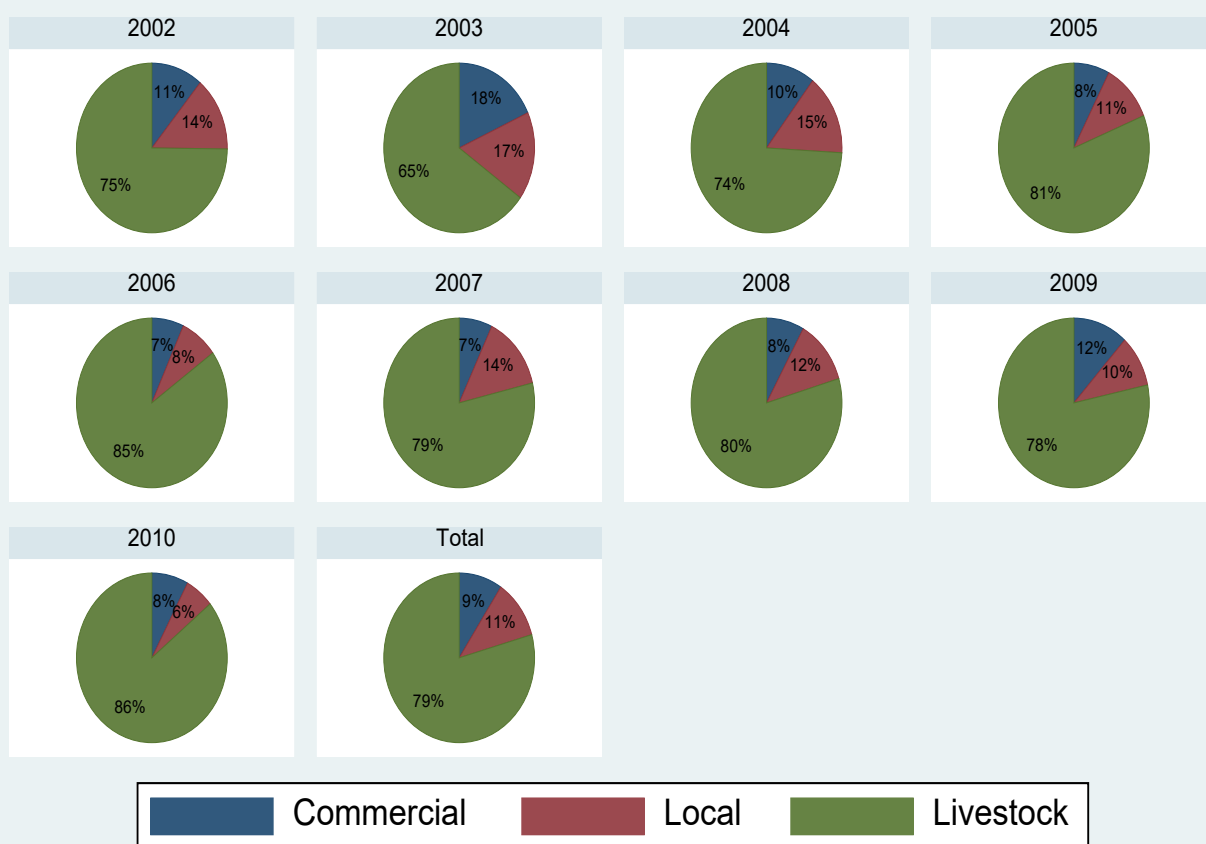
The histogram summarizes the information in Table 9.11.

Fig. 9.7A. Share of wealth from real value of livestock and goods (commercial and local):
Women and men combined -Yearly & total 2002-2010



Source: crValue_Wealth_V7

Fig. 9.7B. Share of wealth from real value of livestock and goods (commercial and local):
Women - Yearly & total 2002-2010



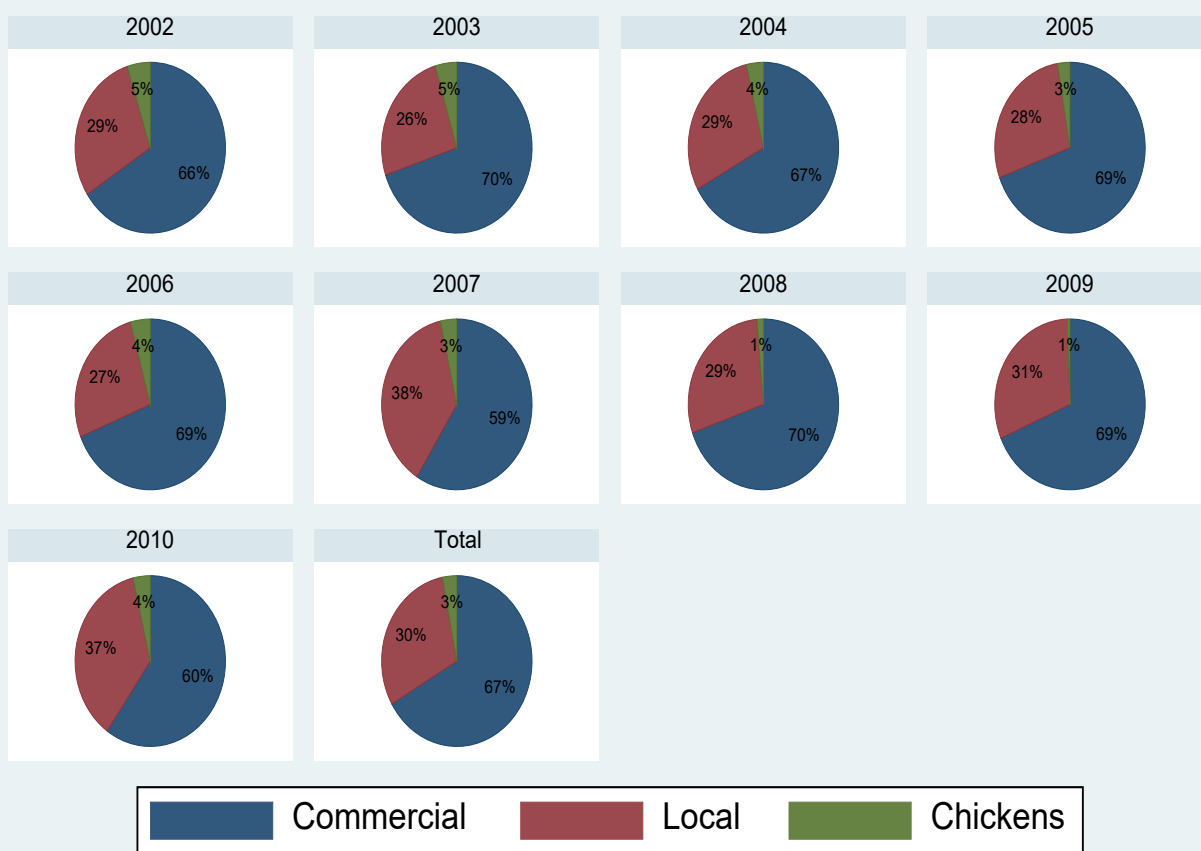
Source: crValue_Wealth_V7

Fig. 9.7C. Share of wealth from real value of livestock and goods (commercial and local):
Men - Yearly & total 2002-2010



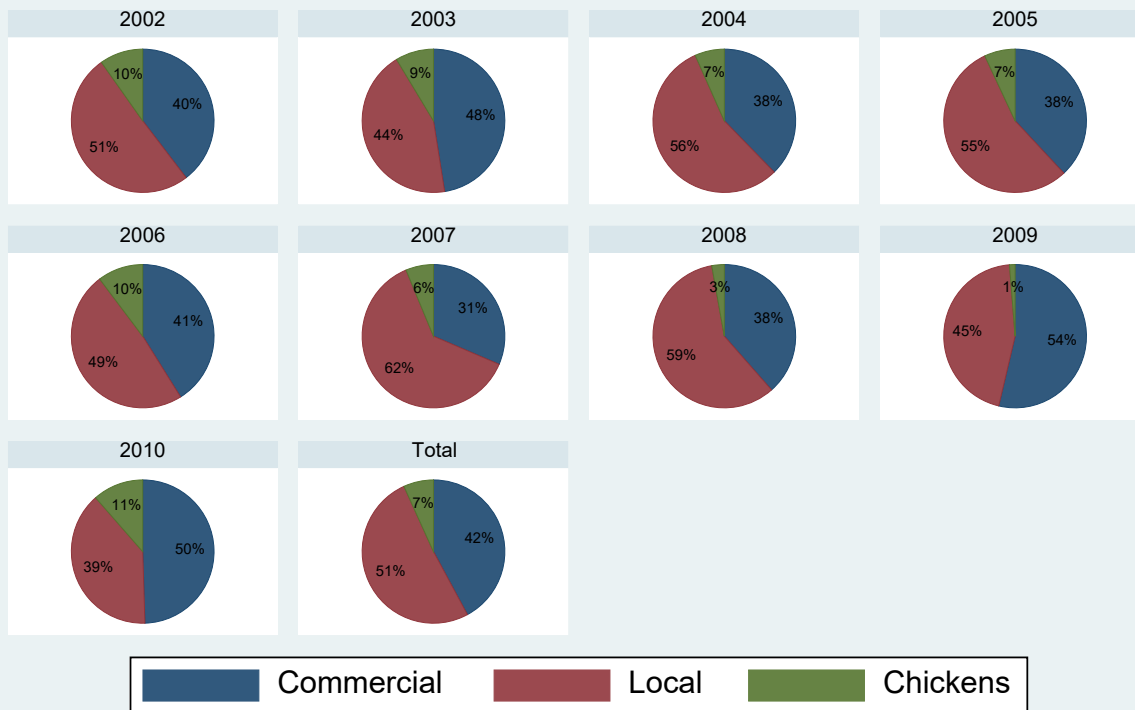
Source: crValue_Wealth_V7

Fig. 9.8A. Share of wealth from real value of chickens and goods (commercial and local):
Women and men combined - Yearly & total 2002-2010



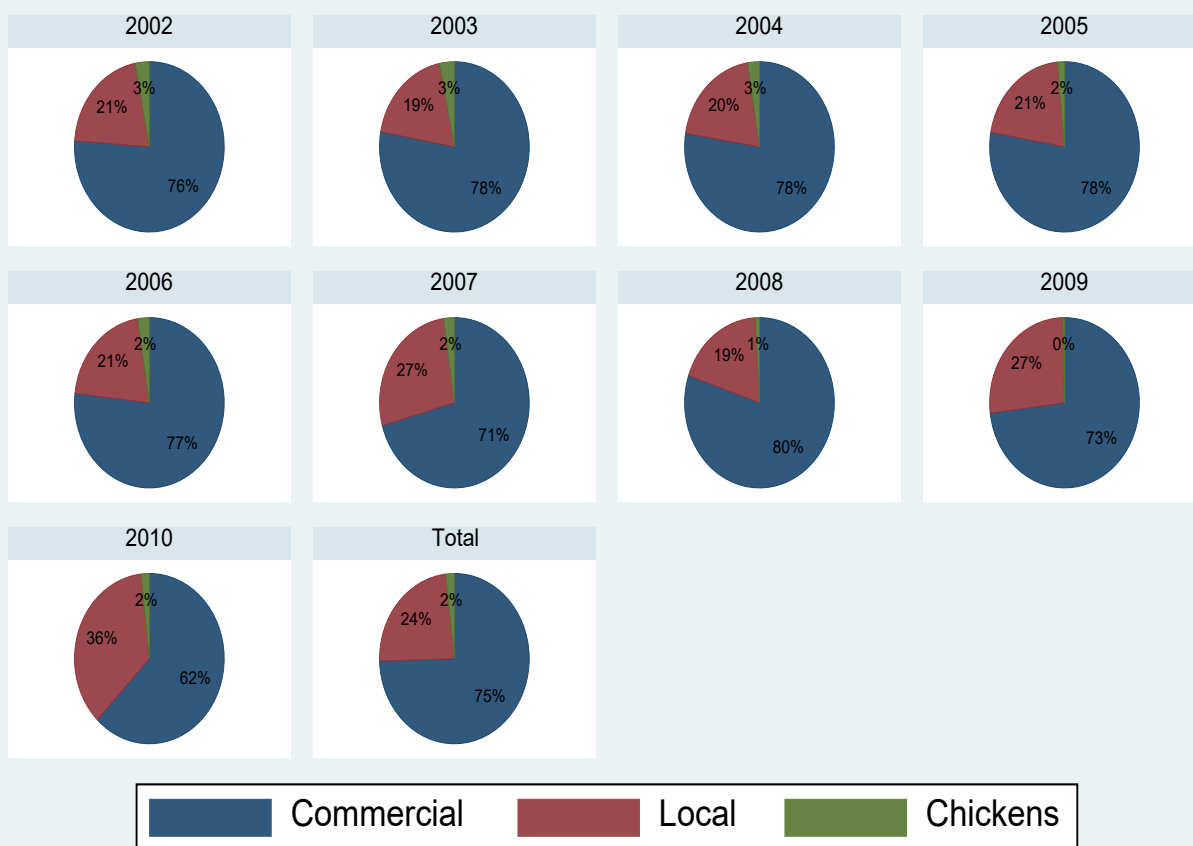
Source: crValue_Wealth_V7

Fig. 9.8B. Share of wealth from real value of chickens and goods (commercial and local):
Women - Yearly & total 2002-2010



Source: crValue_Wealth_V7

Fig. 9.8C. Share of wealth from real value of chickens and goods (commercial and local):
Men - Yearly & total 2002-2010



Source: crValue_Wealth_V7

Table 9.1 Sources for Chapter 9 on physical assets owned by individual adults (age \geq 16 years) and households

<i>Data /a/</i>	<i>Years</i>	<i>Physical assets measured at the level of:</i>	
		<i>Adult</i>	<i>Household</i>
TAPS	2002-2010	Yes	Yes/b/
RCT-I	2008		Yes
RCT-S /c/	2011		No

Notes:

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

/b/ Household-level data goes back to 2000 but was not measured in 2001.

/c/ Unlike TAPS and RCT-I, where all people were surveyed, in this study only one household head selected at random was chosen for the trial and survey. For this reason, data on inequality from this trial is incommensurable with data from the other studies.

Table 9.2. Items in the basket of physical assets to measure the wealth of individual adults (age \geq 16 years), and years covered in the survey

Item		N	Years
Type	Specific good		
<i>A. Core basket: Measured every year starting in 2002</i>			
Commercial	Axe, bicycle, cooking pot, cutlass (<i>machete</i>), hook (fishing), knife, mill (hand), mosquito bed net, fishing net, radio, rifle, shotgun, watch	13	2002-2011
Local	Bag (cotton carrying), set of bow and arrow, dugout canoe, mortar, quern	5	
Livestock	Cow (or bull), duck, hen (or chicken), pig	4	
Total		22	
<i>B. Additions: Measured every year starting in 2007 (footwear) or 2010 (luxuries)</i>			
Commercial:			
Footwear	Rubber sandals (flip-flops), shoes /a/	1	2007-2011
Luxuries	Cell telephone, DVD, electric motor powered by gasoline, TV	4	2010-2011
Total		5	

Notes:

/a/ In the surveys of asset ownershipship, data was collected on both types of footwear, but prices for footwear came from the module on yearly expenditure of durable assets, which did not distinguish between flip-flops, boots, leather shoes, or sneakers. Thus, all footwear is treated as one item when assessing wealth: the quantity of shoes is added to the quantity of flip flops and any other type of footwear, and the sum is multiplied by the median generic price for all and any footwear.

Table 9.3A-B. Sample size and ownership of assets, by sex, year, and total: 2002-2010 (TAPS)

9.3A. Sample (obs)		Years:									
		2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
		Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq	Freq
		(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Sex:		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	Men	296	234	284	336	342	274	297	278	312	2,653
		(50)	(49)	(50)	(50)	(50)	(48)	(48)	(47)	(47)	(49)
	Women	292	245	288	342	337	301	328	319	347	2,799
		(50)	(51)	(50)	(50)	(50)	(52)	(52)	(53)	(53)	(51)
Total		588	479	572	678	679	575	625	597	659	5452
9.3B. % of <u>total</u> sample (obs=5452) owning:											
<i>Core commercial assets:</i>											
Axe		39.46	41.96	38.99	38.35	36.82	34.43	36.96	35.01	42.34	38.21
Bike		10.37	10.23	12.24	10.77	10.31	9.74	9.28	8.71	9.26	10.09
Cutlass		68.71	73.49	76.05	72.71	77.76	74.96	76.32	76.05	79.36	75.15
Bed net		77.55	83.92	89.51	83.63	89.40	87.83	90.72	89.61	88.92	86.89
Hook		69.56	67.64	69.23	67.85	71.72	68.70	72.00	73.87	69.04	70.01
Knife		75.00	79.96	78.67	76.99	80.56	77.22	79.52	82.08	82.25	79.16
Mill		3.74	5.01	5.94	4.72	5.30	15.30	26.56	25.63	25.34	13.24
Net (fishing)		15.65	15.87	18.01	22.42	25.63	24.00	27.36	27.47	26.40	22.82
Pot (cooking)		18.71	21.71	22.03	20.94	21.21	22.43	21.76	21.44	20.18	21.13
Radio		19.90	26.51	28.85	30.38	31.37	27.65	32.96	31.66	29.74	28.94
Rifle		16.67	16.49	17.13	16.37	14.43	15.48	15.04	14.24	13.35	15.41
Shotgun		13.10	14.41	14.86	15.49	15.61	13.74	15.04	15.41	14.42	14.71
Watch		10.54	10.65	11.71	12.09	12.81	13.22	17.60	13.40	15.33	13.13
<i>Core assets made with local materials:</i>											
Bag		69.39	80.38	81.82	80.53	79.82	82.43	83.04	86.77	85.28	81.11
Bow		41.16	39.67	40.38	40.27	40.94	38.43	35.20	36.52	36.57	38.77
Canoe		14.29	14.20	14.69	13.42	14.43	11.65	11.52	12.40	13.51	13.33
Mortar		31.29	36.95	31.64	31.71	32.11	28.87	29.60	34.17	33.69	32.13
Quern		14.63	15.66	13.46	11.21	11.49	9.74	9.60	8.21	6.07	10.95
<i>Core livestock:</i>											
Cow		2.89	3.97	4.20	4.87	3.98	4.35	4.16	4.52	4.25	4.15
Duck		5.78	6.26	5.42	5.60	5.30	3.13	2.24	2.51	3.64	4.40
Hen		55.10	58.46	54.20	49.41	54.05	61.04	57.76	56.95	49.17	54.88
Pig		17.35	18.37	12.94	6.78	7.66	8.00	9.12	8.71	13.96	11.17
<i>Additions:</i>											
Footwear							66.78	73.76	74.04	71.17	71.50
Cell telephones										3.19	3.19
DVD										2.28	2.28
Motor										1.82	1.82
TV										2.43	2.43

Table 9.3C. Share of women (obs=2799) who own different types of assets: 2002-2010 (TAPS) - continued

	Years:									
	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Core commercial assets:</i>										
Axe	12.67	13.06	13.54	12.87	9.79	7.31	6.10	5.64	9.80	9.97
Bike	1.71	2.04	2.78	2.34	1.19	2.66	0.61	1.25	0.58	1.64
Cutlass	48.97	53.06	61.11	57.02	61.72	59.47	60.98	61.76	65.71	59.16
Bed net	60.96	72.24	81.60	73.10	82.20	81.73	84.45	82.76	82.42	78.24
Hook	48.97	44.90	48.61	46.20	54.01	49.83	55.18	57.05	51.30	50.88
Knife	72.26	73.06	76.39	71.93	77.15	73.75	74.39	77.43	78.10	75.03
Mill	2.74	3.67	6.25	5.56	5.64	7.31	10.37	14.11	19.31	8.61
Net (fishing)	1.71	2.45	4.17	7.31	6.82	4.98	6.40	7.21	4.90	5.25
Pot (cooking)	21.92	22.86	28.13	25.15	28.19	28.57	25.00	27.27	27.67	26.19
Radio	4.45	9.39	9.38	11.40	12.46	13.95	13.41	11.91	8.65	10.65
Rifle	1.03	0.41	1.74	0.58	0.59	0.66	0.91	0.94	1.15	0.89
Shotgun	0.34	0.00	0.69	0.58	1.48	1.00	0.61	0.94	0.58	0.71
Watch	3.42	2.45	1.04	1.75	0.89	1.00	1.83	1.25	2.02	1.71
<i>Core assets made with local materials:</i>										
Bag	91.78	94.29	96.18	94.44	94.66	93.36	93.29	92.79	93.95	93.85
Bow	3.42	2.45	2.08	2.92	3.26	1.99	3.05	1.88	0.86	2.43
Canoe	1.37	2.86	1.39	2.92	2.67	1.33	0.91	0.31	1.44	1.68
Mortar	20.21	20.00	21.88	30.99	20.77	18.94	13.11	26.65	23.34	21.90
Quern	12.33	11.84	14.24	10.23	7.42	5.65	5.49	5.33	3.75	8.25
<i>Core livestock:</i>										
Cow	1.71	1.63	1.74	2.63	2.08	1.99	2.74	1.88	2.31	2.11
Duck	6.85	6.53	5.90	6.14	5.64	3.65	1.52	2.82	4.61	4.79
Hen	60.96	62.86	55.90	54.97	63.20	64.45	56.10	57.99	53.60	58.70
Pig	16.78	15.51	15.28	5.56	6.53	9.30	7.01	7.21	11.82	10.25
<i>Additions:</i>										
Footwear						55.15	61.59	62.70	59.08	59.69
Cell telephones									0.86	0.86
DVD									0.29	0.29
Motor									0.29	0.29
TV									0.29	0.29

Table 9.3D. Share of *men* (obs=2653) who own different types of assets: 2002-2010 (TAPS) - continued

	Years:									
	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
<i>Core commercial assets:</i>										
Axe	65.88	72.22	64.79	64.29	63.45	64.23	71.04	68.71	78.53	68.00
Bike	18.92	18.80	21.83	19.35	19.30	17.52	18.86	17.27	18.91	19.00
Cutlass	88.18	94.87	91.20	88.69	93.57	91.97	93.27	92.45	94.55	92.01
Bed net	93.92	96.15	97.54	94.35	96.49	94.53	97.64	97.48	96.15	96.00
Hook	89.86	91.45	90.14	89.88	89.18	89.42	90.57	93.17	88.78	90.20
Knife	77.70	87.18	80.99	82.14	83.92	81.02	85.19	87.41	86.86	83.53
Mill	4.73	6.41	5.63	3.87	4.97	24.09	44.44	38.85	32.05	18.13
Net (fishing)	29.39	29.91	32.04	37.80	44.15	44.89	50.51	50.72	50.32	41.35
Pot (cooking)	15.54	20.51	15.85	16.67	14.33	15.69	18.18	14.75	11.86	15.79
Radio	35.14	44.44	48.59	49.70	50.00	42.70	54.55	54.32	53.21	48.25
Rifle	32.09	33.33	32.75	32.44	28.07	31.75	30.64	29.50	26.92	30.72
Shotgun	25.68	29.49	29.23	30.65	29.53	27.74	30.98	32.01	29.81	29.48
Watch	17.57	19.23	22.54	22.62	24.56	26.64	35.02	27.34	30.13	25.18
<i>Core assets made from local materials:</i>										
Bag	47.30	65.81	67.25	66.37	65.20	70.44	71.72	79.86	75.64	67.66
Bow	78.38	78.63	79.23	78.27	78.07	78.47	70.71	76.26	76.28	77.12
Canoe	27.03	26.07	28.17	24.11	26.02	22.99	23.23	26.26	26.92	25.63
Mortar	42.23	54.70	41.55	32.44	43.27	39.78	47.81	42.81	45.19	42.93
Quern	16.89	19.66	12.68	12.20	15.50	14.23	14.14	11.51	8.65	13.80
<i>Core livestock:</i>										
Cow	4.05	6.41	6.69	7.14	5.85	6.93	5.72	7.55	6.41	6.29
Duck	4.73	5.98	4.93	5.06	4.97	2.55	3.03	2.16	2.56	4.00
Hen	49.32	53.85	52.46	43.75	45.03	57.30	59.60	55.76	44.23	50.85
Pig	17.91	21.37	10.56	8.04	8.77	6.57	11.45	10.43	16.35	12.14
<i>Additions:</i>										
Footwear						79.56	87.21	87.05	84.62	84.67
Cell telephones									5.77	5.77
DVD									4.49	4.49
Motor									3.53	3.53
TV									4.81	4.81

Source: Do file, [anIndividual_Wealth_V2](#)

Table 9.4. Probability of owning different types of assets, regression results, 2002-2010, TAPS (obs=5452)

Part A. Commercial assets (13)

Explanatory variables:	(1) Axe	(2) Bike	(3) Cutlass	(4) Bed net	(5) Fishhook	(6) Knife	(7) Mill
Female	-0.58*** (0.02)	-0.17*** (0.04)	-0.33*** (0.02)	-0.18*** (0.03)	-0.39*** (0.04)	-0.09*** (0.02)	-0.10*** (0.02)
Year	0.001 (0.00)	-0.001 (0.00)	0.01*** (0.00)	0.01*** (0.00)	0.01 (0.00)	0.01** (0.00)	0.03*** (0.00)
Constant	0.16 (6.66)	4.15 (5.70)	-20.06*** (6.01)	-23.68*** (6.04)	-9.75 (7.44)	-13.06** (5.04)	-68.40*** (6.34)
R-squared	0.36	0.08	0.15	0.08	0.18	0.01	0.09

Explanatory variables:	(8) Fishing net	(9) Pot	(10) Radio	(11) Rifle	(12) Shotgun	(13) Watch
Female	-0.36*** (0.04)	0.10** (0.04)	-0.38*** (0.03)	-0.30*** (0.03)	-0.29*** (0.02)	-0.24*** (0.01)
Year	0.02*** (0.00)	0.001 (0.00)	0.01*** (0.00)	-0.001 (0.00)	0.001 (0.00)	0.01*** (0.00)
Constant	-34.68*** (5.88)	-0.96 (2.20)	-22.55*** (7.30)	6.25 (3.63)	-4.35 (4.18)	-15.22*** (4.26)
R-squared	0.20	0.02	0.18	0.17	0.16	0.12

Part B. Assets made from local materials (5)

Explanatory variables:	(1) Bag	(2) Bow	(3) Canoe	(4) Mortar	(5) Quern
Female	0.26*** (0.03)	-0.75*** (0.04)	-0.24*** (0.02)	-0.21*** (0.06)	-0.05** (0.02)
Year	0.01*** (0.00)	-0.001 (0.00)	-0.00 (0.00)	0.001 (0.00)	-0.01*** (0.00)
Constant	-26.68*** (6.41)	8.05 (5.29)	3.59 (2.53)	-0.58 (6.08)	21.43*** (2.89)
R-squared	0.12	0.59	0.12	0.05	0.02

Part C. Livestock (4)

Explanatory variables:	(1) Cow	(2) Duck	(3) Hen	(4) Pig
Female	-0.04*** (0.01)	0.01 (0.01)	0.08*** (0.02)	-0.02 (0.02)
Year	0.001 (0.00)	-0.004** (0.00)	-0.001 (0.01)	-0.01** (0.00)
Constant	-2.41 (4.11)	9.53** (4.07)	4.21 (12.75)	14.26** (5.02)
R-squared	0.01	0.00	0.01	0.004

Table 9.4. Probability of owning different types of assets, regression results, 2002-2010, TAPS (n=5452) – continued

Notes: Results of Ordinary Least Squares (OLS) regressions with clustering by village and robust standard errors in parenthesis. Regressions include one record for each person per year. Outcome is a binary variable if the person owned an asset during the survey year (yes = 1; no = 0). *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Source: Do file, [anIndividual_Wealth_V2](#)

Table 9.5. Summary statistics of number of core assets owned among adults who owned the asset, totals for 2002-2010 (TAPS)

Asset:	N	Mean	SD	Median
<i>Commercial assets:</i>				
Axes	2,083	1.34	0.59	1
Bikes	550	1.12	0.41	1
Cutlasses	4,097	1.74	1.01	1
Knives	4,316	1.65	0.93	1
Mills	722	1.02	0.15	1
Bed nets	4,737	1.72	0.98	1
Pots	1,152	1.2	0.52	1
Radios	1,578	1.13	0.38	1
Shotguns	802	1.06	0.27	1
Watches	716	1.06	0.31	1
<i>Assets from local materials:</i>				
Bags	4,422	2.77	2.1	2
Bows	2,114	1.39	0.72	1
Canoes	727	1.18	0.46	1
Mortars	1,752	1.08	0.33	1
Querns	597	1.01	0.15	1
<i>Livestock:</i>				
Cows	226	3.23	3.17	2
Ducks	240	2.37	1.85	2
Hens	2,992	3.71	4.28	3
Pigs	609	1.65	1.42	1

Source: Do file, [anIndividual_Wealth_V2](#)

Table 9.6. Regression results of natural log of number of assets owned (outcome) against owner's sex and survey year among Tsimane' adults who owned the asset, 2002-2010 (TAPS)

Part A. Core commercial assets (13)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Explanatory variables:	Axes	Bikes	Cutlasses	Hooks	Knives	Mills	Bed nets
Female	-0.23*** (0.04)	-0.06* (0.03)	-0.78*** (0.05)	-1.22*** (0.07)	-0.19** (0.07)	0.001 (0.02)	-0.45*** (0.09)
Year	0.01* (0.01)	0.01 (0.01)	0.03*** (0.01)	0.02 (0.02)	0.01 (0.01)	0.001 (0.001)	0.05*** (0.01)
Constant	-25.33* (12.55)	-16.36 (14.4)	-54.91*** (14.91)	-39.71 (33.18)	-16.63 (15.61)	-3.14 (3.84)	-95.34*** (14.48)
Observations	2,083	550	4,097	3,817	4,316	722	4,737
R-squared	0.02	0.01	0.15	0.12	0.01	0.01	0.07
Part B. Core assets made from local materials (5)							
	(8)	(9)	(10)	(11)	(12)	(13)	
Explanatory variables:	Fishing net	Pots	Radios	Rifles	Shot-guns	Watches	
Female	-0.23*** (0.06)	0.06 (0.04)	-0.09*** (0.02)	0.03 (0.05)	-0.07*** (0.02)	-0.04 (0.03)	
Year	0.03*** (0.01)	0.001 (0.01)	-0.01 (0.001)	-0.01 (0.001)	0.001 (0.001)	-0.001 (0.001)	
Constant	-63.66** (21.20)	-4.74 (17.39)	13.53* (7.21)	11.93 (8.19)	-3.32 (9.99)	9.31 (6.88)	
Observations	1,244	1,152	1,578	840	802	716	
R-squared	0.02	0.01	0.01	0.01	0.01	0.01	
	(1)	(2)	(3)	(4)	(5)		
Explanatory variables:	Bags	Bows	Canoes	Mortars	Querns		
Female	0.81*** (0.05)	-0.09** (0.04)	-0.06 (0.04)	0.01 (0.01)	-0.01 (0.01)		
Year	0.01 (0.01)	-0.001 (0.001)	0.001 (0.001)	-0.001 (0.001)	-0.001 (0.001)		
Constant	-12.35 (12.08)	7.15 (6.98)	-5.72 (6.36)	5.12 (3.77)	1.60 (3.64)		
Observations	4,422	2,114	727	1,752	597		
R-squared	0.35	0.01	0.01	0.01	0.01		

Table 9.6. Regression results of natural log of number of assets owned (outcome) against owner's sex and survey year among Tsimane' adults who owned the asset, 2002-2010 (TAPS) - continued

Part C. Core livestock (4)		(1)	(2)	(3)	(4)
Explanatory variables:		Cows	Ducks	Hens	Pigs
	Female	-0.29**	0.03	-0.02	-0.06
		(0.12)	(0.09)	(0.05)	(0.05)
	Year	-0.05**	-0.03	0.02**	0.01*
		(0.02)	(0.02)	(0.01)	(0.01)
Constant		104.11**	51.50	-42.12**	-26.32*
		(43.69)	(33.81)	(16.94)	(13.32)
Observations		226	240	2,992	609
R-squared		0.05	0.01	0.01	0.01

Notes: Results of Ordinary Least Squares (OLS) regressions with clustering by village and robust standard errors in parenthesis. Regressions include one record for each person per year. Outcome is the natural logarithm of the quantity of the asset owned by the adult. The sample excludes people without the asset. *** p<0.01, ** p<0.05, * p<0.10.

Source: Do file, [anIndividual_Wealth_V2](#)

Table 9.7A. Gini coefficient of quantity inequality for different types of assets owned among all Tsimane' adults (women and men) surveyed yearly, 2002-2010 (TAPS)

	Years:									
	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Core commercial assets:										
Axe	0.679	0.657	0.675	0.686	0.701	0.717	0.7	0.712	0.668	0.690
Bike	0.904	0.908	0.892	0.896	0.908	0.911	0.918	0.926	0.917	0.909
Cutlass	0.5	0.453	0.451	0.488	0.432	0.447	0.45	0.445	0.44	0.457
Bed net	0.409	0.371	0.32	0.38	0.364	0.364	0.352	0.363	0.353	0.369
Hook	0.527	0.536	0.534	0.533	0.497	0.526	0.519	0.491	0.527	0.521
Knife	0.437	0.41	0.412	0.438	0.408	0.426	0.41	0.403	0.394	0.416
Mill	0.963	0.95	0.942	0.953	0.947	0.853	0.74	0.749	0.752	0.870
Fish net	0.873	0.883	0.862	0.821	0.795	0.815	0.793	0.796	0.809	0.827
Pot	0.839	0.811	0.815	0.815	0.818	0.814	0.811	0.817	0.831	0.819
Radio	0.827	0.765	0.745	0.727	0.718	0.743	0.71	0.717	0.725	0.740
Rifle	0.845	0.852	0.834	0.843	0.858	0.853	0.859	0.861	0.872	0.854
Shotgun	0.878	0.86	0.859	0.854	0.853	0.87	0.858	0.856	0.865	0.861
Watch	0.901	0.897	0.894	0.88	0.882	0.874	0.831	0.875	0.85	0.875
Core assets made with local materials:										
Bag	0.552	0.485	0.481	0.502	0.487	0.462	0.467	0.46	0.479	0.487
Bow	0.683	0.686	0.682	0.687	0.682	0.698	0.725	0.709	0.709	0.696
Canoe	0.879	0.873	0.871	0.883	0.874	0.9	0.899	0.893	0.887	0.885
Mortar	0.713	0.652	0.711	0.704	0.707	0.727	0.714	0.684	0.682	0.700
Quern	0.859	0.845	0.865	0.889	0.887	0.904	0.904	0.918	0.941	0.892
Core livestock:										
Cow	0.982	0.977	0.975	0.976	0.979	0.979	0.978	0.973	0.977	0.978
Duck	0.962	0.962	0.964	0.964	0.963	0.982	0.985	0.984	0.973	0.972
Hen	0.692	0.701	0.699	0.725	0.719	0.649	0.675	0.673	0.726	0.698
Pig	0.877	0.856	0.898	0.951	0.955	0.943	0.937	0.94	0.913	0.923

Note: The Gini coefficients are based on the number of each asset owned by the adult. *Vide* Table 9.3A for the sample size for each year. The column total captures the Gini coefficient for all years combined among women and men.

Source: Do file, [anIndividual_Wealth_V2](#)

Table 9.7B. Gini coefficient of quantity inequality for different types of assets owned among Tsimane' adult women surveyed yearly, 2002-2010 (TAPS)

	Years:									
	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Core commercial assets:										
Axe	0.885	0.877	0.878	0.879	0.915	0.939	0.944	0.949	0.915	0.911
Bike	0.987	0.980	0.972	0.977	0.988	0.976	0.994	0.987	0.994	0.985
Cutlass	0.590	0.539	0.486	0.523	0.499	0.507	0.515	0.487	0.480	0.514
Bed net	0.502	0.406	0.319	0.421	0.383	0.388	0.390	0.390	0.375	0.405
Hook	0.650	0.679	0.639	0.672	0.600	0.647	0.595	0.590	0.633	0.634
Knife	0.442	0.451	0.397	0.454	0.426	0.451	0.436	0.428	0.418	0.435
Mill	0.973	0.963	0.938	0.944	0.944	0.930	0.902	0.865	0.810	0.916
Fish net	0.983	0.980	0.969	0.943	0.937	0.959	0.949	0.933	0.961	0.957
Pot	0.815	0.800	0.772	0.781	0.760	0.764	0.787	0.762	0.776	0.779
Radio	0.963	0.910	0.912	0.891	0.875	0.867	0.874	0.887	0.919	0.899
Rifle										0.992
Shotgun										0.993
Watch										0.983
Core assets made with local materials:										
Bag	0.352	0.329	0.322	0.364	0.339	0.340	0.353	0.362	0.377	0.351
Bow	0.970	0.978	0.982	0.975	0.974	0.985	0.972	0.983	0.991	0.979
Canoe	0.986	0.971	0.986	0.971	0.976	0.987	0.991	0.997	0.989	0.985
Mortar	0.815	0.814	0.803	0.708	0.823	0.820	0.874	0.756	0.775	0.798
Quern	0.877	0.885	0.858	0.898	0.926	0.944	0.945	0.947	0.963	0.918
Core livestock:										
Cow	0.989	0.988	0.985	0.982	0.989	0.988	0.980	0.988	0.985	0.988
Duck	0.950	0.961	0.959	0.957	0.962	0.978	0.992	0.984	0.966	0.970
Hen	0.653	0.634	0.681	0.689	0.663	0.638	0.704	0.660	0.708	0.674
Pig	0.882	0.882	0.862	0.949	0.970	0.938	0.953	0.948	0.932	0.933

Note: The Gini coefficients are based on the number of each asset owned by the adult. Table 9.3A has the sample size for each year. An empty row means that I did not calculate Gini coefficients because few or no women owned the asset, as shown in Table 9.3C. The column total captures the Gini coefficient for all years combined among women.

Source: Do file, [anIndividual_Wealth_V2](#)

Table 9.7C. Gini coefficient of quantity inequality for different types of assets owned among Tsimane' adult *men* surveyed yearly, 2002-2010 (TAPS)

	Years:									
	2002	2003	2004	2005	2006	2007	2008	2009	2010	Total
Core commercial assets:										
Axe	0.470	0.419	0.467	0.479	0.488	0.473	0.427	0.439	0.387	0.454
Bike	0.820	0.832	0.809	0.815	0.828	0.840	0.835	0.855	0.832	0.830
Cutlass	0.361	0.295	0.354	0.382	0.300	0.299	0.321	0.320	0.324	0.332
Bed net	0.296	0.295	0.281	0.306	0.309	0.317	0.301	0.312	0.303	0.308
Hook	0.373	0.341	0.373	0.360	0.346	0.360	0.381	0.334	0.369	0.361
Knife	0.428	0.356	0.419	0.415	0.388	0.396	0.378	0.370	0.366	0.393
Mill	0.953	0.936	0.947	0.961	0.950	0.769	0.562	0.615	0.689	0.822
Fish net	0.763	0.781	0.754	0.697	0.652	0.656	0.620	0.627	0.639	0.688
Pot	0.861	0.823	0.856	0.848	0.876	0.868	0.838	0.880	0.890	0.861
Radio	0.692	0.611	0.574	0.558	0.560	0.606	0.527	0.520	0.510	0.572
Rifle	0.702	0.701	0.682	0.689	0.725	0.696	0.714	0.709	0.742	0.708
Shotgun	0.761	0.713	0.723	0.712	0.722	0.739	0.708	0.702	0.722	0.723
Watch	0.836	0.816	0.795	0.777	0.775	0.747	0.666	0.746	0.705	0.762
Core assets made with local materials:										
Bag	0.643	0.500	0.479	0.506	0.516	0.481	0.477	0.406	0.435	0.496
Bow	0.399	0.378	0.377	0.393	0.394	0.384	0.451	0.395	0.395	0.397
Canoe	0.772	0.769	0.755	0.793	0.773	0.804	0.797	0.774	0.769	0.779
Mortar	0.612	0.483	0.617	0.699	0.591	0.625	0.538	0.600	0.579	0.598
Quern	0.840	0.803	0.873	0.881	0.848	0.861	0.859	0.885	0.916	0.865
Core livestock:										
Cow	0.989	0.988	0.985	0.982	0.989	0.988	0.980	0.988	0.985	0.966
Duck	0.950	0.961	0.959	0.957	0.962	0.978	0.992	0.984	0.966	0.975
Hen	0.653	0.634	0.681	0.689	0.663	0.638	0.704	0.660	0.708	0.723
Pig	0.882	0.882	0.862	0.949	0.970	0.938	0.953	0.948	0.932	0.912

Note: The Gini coefficients are based on the number of each asset owned by the adult. Table 9.3A has the sample size for each year. The column total captures the Gini coefficient for all years combined among men.

Source: Do file, [anIndividual_Wealth_V2](#)

Table 9.8. Yearly change in the Gini coefficient of the quantity of assets owned (outcome) by individual adult women and men during the yearly surveys of the TAPS study, 2002-2010 (n = 9)

<i>Asset – Gini (outcome)</i>	<i>Yearly change. Over time, Gini coefficient:</i>		
	<i>Fell</i>	<i>Did not change</i>	<i>Rose</i>
Core commercial assets:			
Axes		0.003 (0.003)	
Bicycles			0.003 (0.001)**
Cutlass	-0.005 (0.002)*		
Fishing hooks		-0.003 (0.002)	
Knives	-0.003 (0.001)*		
Mills	-0.032 (0.004)***		
Mosquito bed nets		-0.003 (0.003)	
Fishing nets	-0.011(0.002)***		
Pots		-0.0001 (0.002)	
Radios	-0.010 (0.004)**		
Rifles			0.003 (0.001)**
Shotguns		-0.001 (0.001)	
Watches	-0.007 (0.002)***		
Core assets made from local materials:			
Bags	-0.007 (0.004)**		
Bows			0.005 (0.001)***
Canoes			0.003 (0.001)**
Mortars		0.0001 (0.003)	
Querns		0.0001 (0.003)	
Core livestock:			
Cows		-0.0001 (0.001)	
Ducks			0.003 (0.001)**
Hens		-0.001 (0.003)	
Pigs			0.008 (0.004)*

Notes: Each row represents a different regression. Growth rates are from OLS regressions of the Gini coefficient of the quantity of the asset for the sample during the yearly survey (outcome) against the year variable. Regressions include a constant (not shown). *** p<0.01, ** p<0.05, * p<0.10.

Source: Do file, [anIndividual_Wealth_V2](#)

Table 9.9. Sources for yearly price data for assets

Assets:	Year:									
	2002 ^a	2003 ^a	2004	2005	2006	2007	2008 ^b	2009 ^c	2010	2011
A. Core:										
Commercial	V	V	E	E	E	E	E	E	E	E
Local	V	V	V	V	V	V	V	V	V	V
Livestock	V	V	E V=Duck	E	E=cow, hen, pig V=duck	E		E=hen, cow V=duck, pig	E V=hen	E=pig, hen V=cow, duck
Prices missing for:					Quern			Canoe, mill, quern	Canoe, quern	
B. Additions: Commercial										
Footwear							E	E	E	E
Luxuries									E	E

Notes:

Black shaded area indicates years in which we did not collect data on the ownership of the asset (Table 9.2). Data on asset ownership was collected for each adult (age \geq 16 years) in the household.

E = Unit price for the asset extracted from the module on yearly expenditures in durable assets by adults. Unit price = total value of expenditure in the item divided by the quantity of the item purchased. Median price from pooled sample in a year chosen as the price to value the asset for everyone in the sample; by construction, median price >0 bolivianos.

V = The unit price came from the village survey of the most recent price at which goods were sold during the past three months.

Prices of zero were excluded. We chose the median price of village selling price >0 bolivianos.

^a Median price of villages and town combined. Three quarterly surveys in each village were done.

^b The RCT on inequality of 2008 asked about the basket of physical assets owned by the adult, including footwear, but it did not have a module on the yearly expenditures in durable assets. The prices for assets for 2008 come from the yearly expenditure survey of the longitudinal study and from the village survey of selling prices for local goods and livestock, also from the longitudinal study.

^c Missing prices for dugout canoe and querns imputed from end-line (2009) survey of RCT of village income inequality

Source: Do file, crPrices_Wealth_V5

Table 9.10. Questions in community survey to elicit information on physical assets used to construct measures of asset wealth, 2011.

Name	Question
A. Core	
Commercial. Selling price in the stores of the <i>towns</i> of San Borja, Yucumo, and Palmar of:	
Cooking pot	A cooking pot able to hold 150 liters
Cutlass	A large, new cutlass
Bicycle	A new Chinese bicycle
Hand mill	A hand mill
Radio	A radio with a tape player
Watch	A wrist watch
Rifle	A second-hand rifle, 22 gauge
Rishing hook	A fishing hook 2.5 inches long
Axe	An axe 3.5 cm
Knife	A knife with a 15-cm blade
Mosquito net	A doubled-sized mosquito net
Fishing net	A fishing net (2 meters by 20 meters)
Shotgun	A second-hand shotgun, 16 gauge
Local. Village leaders (e.g., teacher) asked about the most recent selling price in the <i>village</i> in the last three months of:	
Quern	A quern
Bow and arrow	Set of bow and arrows for an adult
Dugout canoe	With a capacity to carry 30 <i>arrobas</i> of cargo [1 <i>arroba</i> = 11.5kg]
Mortar	A mortar
Cotton carrying bag	Carrying bag with a capacity for one <i>arroba</i> [1 <i>arroba</i> = 11.5kg]
Livestock. Village leaders (e.g., teacher) asked about the most recent selling price in the <i>village</i> in the last three months of:	
Pig	A one-year old pig
Hen (or chicken)	A hen that lays eggs
Cow (or bull)	A one-year old cow
Duck	A one-year old duck that lays eggs
B. Additions:	
Commercial. Selling price in the stores of the <i>towns</i> of San Borja, Yucumo, and Palmar of:	
Footwear	Pair of shoes (separate question for pair of flip flops)
DVD	A DVD
Motor	An electric motor powered by gasoline
Cell	A cell telephone
TV	A television

Notes:

The term community includes towns and villages

Table 9.11. Gini coefficients of wealth values for core assets owned by Tsimane' adults (age \geq 16 years), surveyed yearly in the longitudinal study, TAPS, 2002-2010

Category	Sample	Years									Total	CV	Growth
		2002	2003	2004	2005	2006	2007	2008	2009	2010			
All assets	Both	0.26	0.34	0.32	0.30	0.28	0.31	0.25	0.35	0.31	0.34	0.11	0.3
	Women	0.12	0.15	0.10	0.08	0.06	0.08	0.08	0.08	0.09	0.15	0.28	-5.9*
	Men	0.12	0.12	0.08	0.12	0.08	0.07	0.11	0.08	0.11	0.18	0.19	-2.3
Commercial	Both	0.59	0.56	0.60	0.65	0.61	0.60	0.60	0.55	0.58	0.60	0.05	-0.3
	Women	0.65	0.55	0.58	0.60	0.55	0.54	0.52	0.49	0.52	0.57	0.09	-2.6***
	Men	0.42	0.38	0.41	0.47	0.44	0.41	0.40	0.36	0.38	0.42	0.08	-1.3
Local	Both	0.44	0.43	0.38	0.51	0.49	0.47	0.43	0.58	0.73	0.53	0.21	5.1**
	Women	0.34	0.34	0.31	0.37	0.37	0.34	0.35	0.36	0.57	0.40	0.20	3.9*
	Men	0.51	0.49	0.44	0.58	0.54	0.56	0.50	0.63	0.69	0.60	0.14	3.6**
Livestock	Both	0.21	0.30	0.30	0.23	0.24	0.28	0.18	0.31	0.24	0.33	0.18	-0.08
	Women	0.05	0.06	0.03	0.02	0.02	0.03	0.02	0.01	0.03	0.14	0.60	-12.6
	Men	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.001	0.01	0.17	0.62	-13.1

Notes:

Sample sizes for computation of each Gini coefficient are in Table 9.3A. Definitions of core assets are in Table 9.2 section A. Gini coefficients computed from real (inflation-adjusted) values. Total = values for all years combined. CV = coefficient of variation (SD/mean) of yearly values 2002-2010. Growth = year-to-year percent growth rate of real values 2002-2010. Growth rates come from OLS regressions of natural logarithm of the yearly Gini coefficient against the variable for year; the regressions include a constant. Sample size for regressions was nine observations. *** p<0.01, ** p<0.05, * p<0.10.

Source: [Do file, crValue_Wealth_V7](#)

Table 9.12. Yearly growth in the real monetary value of wealth stored in livestock, commercial goods, and goods made from local material: Regression results, 2002-2010 (TAPS)

Explanatory variables:	(1)	(2)		(3)	(4)		(5)	(6)		(7)	(8)		(9)
		Livestock			Commercial			Local			Local		
	Both	Women	Men	Both	Women	Men	Both	Women	Men	Both	Women	Men	Men
Year	0.07*** (0.002)	0.07*** (0.002)	0.07*** (0.002)	0.05*** (0.009)	0.06*** (0.018)	0.03** (0.012)	-0.02 (0.016)	-0.06*** (0.018)	0.03 (0.021)				
Female	-1.08*** (0.004)			-2.14*** (0.105)						0.15 (0.114)			
Constant	-137.2*** (4.048)	-137.1*** (4.709)	-138.4*** (4.125)	-85.55*** (17.972)	-116.54*** (37.041)	-54.93** (23.547)	46.56 (33.005)	136.30*** (35.875)	-48.56 (41.656)				
Observations	5,452	2,799	2,653	5,452	2,799	2,653	5,452	2,799	2,653				
R-squared	0.868	0.453	0.387	0.355	0.009	0.004	0.003	0.012	0.001				

Notes: Table 9.2 (section A) has definition of the goods for the headings livestock, commercial, and local. Regressions are OLS with robust standard errors clustered by village. The outcome is the logarithm of the value held in livestock, commercial, or local goods. The logarithm is used with the inverse hyperbolic sine function. *** p<0.01, ** p<0.05, * p<0.10.

Source: [Do file, crValue_Wealth_V7](#)

Table 9.13. Association between owning selected physical assets and having borrowed one the seven days before the interview: Yearly data 2002-2006, 2008 from the longitudinal study (2002-2006, 2008; TAPS) and the randomized-controlled trial on village income inequality (2008)

<i>Part A: Combined sample of women and men (n = 4,373)</i>							
Outcome. Binary variable if subject borrowed one of the following (1=yes; 0=no):							
Explanatory variables:	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	<u>Pots</u>	<u>Bike</u>	<u>Canoe</u>	<u>Net</u>	<u>Rifle</u>	<u>Shotgun</u>	<u>Mortar</u>
Lacks	0.14*** (0.017)	0.05*** (0.008)	0.38*** (0.028)	0.16*** (0.016)	0.13*** (0.016)	0.18*** (0.015)	0.14*** (0.013)
Year	-0.01 (0.006)	-0.001 (0.003)	-0.01 (0.010)	0.001 (0.005)	-0.001 (0.003)	0.001 (0.004)	-0.01 (0.007)
Female	0.16*** (0.020)	-0.05*** (0.009)	-0.21*** (0.021)	-0.14*** (0.018)	-0.14*** (0.015)	-0.18*** (0.014)	0.07*** (0.019)
Constant	15.32 (12.416)	6.20 (6.448)	13.82 (20.938)	-9.48 (9.718)	9.05 (6.440)	-8.05 (8.738)	20.06 (13.889)
R-squared	0.119	0.046	0.185	0.105	0.110	0.139	0.096
<i>Part B: Women (n = 2,218)</i>							
Lacks	0.21*** (0.024)	0.001* (0.002)	0.16*** (0.044)	0.03*** (0.005)	0.001 (0.002)	0.01 (0.005)	0.20*** (0.022)
Year	-0.001 (0.011)	-0.001 (0.001)	0.001 (0.012)	0.001 (0.005)	-0.001 (0.001)	-0.001 (0.001)	-0.001 (0.010)
Constant	5.08 (22.261)	0.19 (2.425)	-3.27 (24.701)	-8.68 (9.869)	0.38 (2.365)	1.69 (2.810)	6.56 (20.295)
R-squared	0.115	0.015	0.103	0.030	0.048	0.034	0.113
<i>Part C: Men (n = 2,155)</i>							
Lacks	0.02*** (0.007)	0.07*** (0.010)	0.44*** (0.031)	0.21*** (0.020)	0.14*** (0.017)	0.19*** (0.015)	0.14*** (0.025)
Year	-0.01** (0.005)	-0.01 (0.006)	-0.02 (0.013)	0.01 (0.008)	-0.01 (0.007)	0.01 (0.008)	-0.02*** (0.006)
Constant	22.14** (9.936)	11.58 (12.115)	32.68 (27.096)	-10.37 (16.093)	17.16 (13.400)	-16.05 (15.787)	33.10*** (11.770)
R-squared	0.028	0.050	0.259	0.129	0.091	0.104	0.113

Notes: *Lack* = 1 if subject did not own the asset in the column heading, and zero otherwise. For example, the left-most, top cell in part A, shows that adults who did not own a pot were 14 percentage points more likely to have borrowed a pot the seven days before the interview. Regressions are OLS with constant and robust standard errors clustered by village. Regressions include the following control variables (not shown): year and village fixed effects and study type (TAPS = 1; randomized controlled trial on village inequality = 0).

Source: [Do file, crQuantity_Borrow_Wealth_V1](#)

Appendix A

Average adult wealth in inflation-adjusted *bolivianos*, 2002-2010

Wealth type:	Mean	Median	SD
		All	
Total, of which:	5,641	4,289	3,573
Commercial	874	377	1,070
Local	398	261	515
Livestock	4,370	3,046	2,686
		Women	
Total, of which:	2,825	2,758	781
Commercial	263	142	375
Local	319	274	285
Livestock	2,243	2,305	559
		Men	
Total, of which:	8,611	8,066	2,899
Commercial	1,518	1,299	1,181
Local	480	233	668
Livestock	6,613	5,912	2,166

Notes:

Sample sizes are in last column (Total) of Table 9.3A. SD = standard deviation. Nominal values deflated with Bolivia's Consumer Price Index (CPI); see [Chapter 8](#).

Source: [Do file, crValue_Wealth_V7](#)

Appendix B

Guide to tables and figures for Chapter 9

Figure/a/	Table	Source	
		Table	Do file
9.1A-9.1C		Tables 9.3B-9.3D	
9.2A-9.2B		Table 9.7A	
9.3A-9.3B		Table 9.7C-9.7B	
9.4A-9.4C		Table 9.7A	
9.5A /b/		Table 9.7A	an Prices V1
9.6		Table 9.11	
9.7-9.8			crValue Wealth V7
	9.3-9.8		anIndividual Wealth V2
	9.9		crPrices Wealth V5
	9.11-12		crValue Wealth V7
	9.13		crQuantity Borrow Wealth V1
	Appendix A		crValue Wealth V7

/a/ Often the figures in the chapter come from cutting and pasting the information from the table into an Excel file, and producing the graphs from Excel. Sometimes the figures come directly from Stata. In either case, I have tried to put numbered graphs in folders.

/b/ Source is do file called an_Prices_V1; do file produces Stata file that is then transferred to Excel and then Gini coefficients from Table 9.7A added to the Excel file.

Reference List

- Armentia, N. (1905). *Relación histórica de las misiones franciscanas de Apolobamba*. La Paz, Bolivia: Imprenta del Estado.
- Borgerhoff Mulder, M., Bowles, S., Hertz, T., Bell, A., Beise, J., Clark, G., . . . Wiessner, P. (2009). Intergenerational Wealth Transmission and the Dynamics of Inequality in Small-Scale Societies. *Science*, 326(5953), 682-688. Retrieved from <Go to ISI>://000271233200026
- Cowell, F., Karagiannaki, E., & McKnight, A. (2018). Accounting for cross-country differences in wealth inequality. *Review of Income and Wealth*, 64(2), 322-356.
- Cowell, F., Karagiannaki, E., & McKnight, A. (2019). The changing distribution of wealth in the pre-crisis US and UK: The role of socio-economic factors. *Oxford Economic Papers*, 71(1), 1-24.
- Godoy, R., Patel, A., Reyes-García, V., Seyfried, C., Leonard, W., McDade, T., . . . Vadez, V. (2006). Nutritional status and spousal empowerment among native Amazonians. *Social Science & Medicine*, 63, 1517-1530.
- Gurven, M., Mulder, M. B., Hooper, P. L., Kaplan, H., Quinlan, R., Sear, R., . . . Bell, A. (2010). Domestication Alone Does Not Lead to Inequality Intergenerational Wealth Transmission among Horticulturalists. *Current Anthropology*, 51(1), 49-64. doi:10.1086/648587
- Hahn-Hissink, K., & Hahn, A. (1989). *Chimane: Notizen und Zeichnungen aus Nordost-Bolivien*. Wiesbaden, Germany: Franz Steiner Verlag.
- Kaiser, B., Hruschka, D., & Hadley, C. (2017). Measuring material wealth in low-income settings: A conceptual and how-to-guide. *American Journal of Human Biology*, 29, e22987. Retrieved from e22987
- Métraux, A. (1942). The native tribes of eastern Bolivia and western Matto Grosso. In J. Stewart (Ed.), *Handbook of South American Indians* (Vol. 134). Washington, D.C.: Smithsonian Institution, Bureau of American Ethnology,, United States Government Printing Office.
- Nordenskiöld, E. (1979 [orig. 1924]). *The ethnography of South-America seen from the Mojos in Bolivia*. New York: AMS Press.
- Nordenskiöld, E. (1999 [orig. 1926]). *The cultural history of the South American Indians*. New York: AMS Press, Inc.
- Nordenskiöld, E. (2001 [orig 1924]). *Exploraciones y aventuras en Sudamérica*. La Paz: Plural Editores.
- Nordenskiöld, E. (2003 [orig. 1922]). *Indios y blancos en el nordeste de Bolivia*. La Paz, Bolivia: Plural editores.
- Piketty, T. (2014). *Capital in the twenty-first century*. Cambridge, Massachusetts: Harvard University Press.
- Reyes-García, V. (2001). *Indigenous people, ethnobotanical knowledge, and market economy. A case study of the Tsimane' Amerindians in lowland Bolivia*. (PhD). University of Florida, Gainesville.
- Rivière, P. (2010). Alfred Métraux: Empiricist and romanticist. In R. Parkin & A. de Sales (Eds.), *Out of the study and into the field: Ethnographic theory and practice in French anthropology* (pp. 151-170). New York: Berghahn Books.
- Smith, E. A., Hill, K., Marlowe, F. W., Nolin, D., Wiessner, P., Gurven, M., . . . Bell, A. (2010). Wealth transmission and inequality among hunter-gatherers. *Current Anthropology*, 51(1), 19-34.
- Undurraga, E., Behrman, J., Grigorenko, E. L., Schultz, A., Yiu, J., TAPS, & Godoy, R. (2013). Math skills and market and non-market outcomes: Evidence from an Amazonian society of forager-farmers. *Economics of Education Review*, 37, 138-147.

Undurraga, E. A., Nica, V., Zhang, R., Mensah, I. C., & Godoy, R. A. (2016). Individual health and the visibility of village economic inequality: Longitudinal evidence from native Amazonians in Bolivia. *Economics and Human Biology*, 23, 18-26.

ⁱ "Aunque ya abandonadas por cuanto los misioneros los habían provisto de toda clase de herramientas de hierro y acero."

ⁱⁱ "Lo peor es que les resulta difícil independizarse de los blancos, pues han conocido el hierro y no pueden prescindir de él."

ⁱⁱⁱ "No siempre es fácil intercambiar aquello que uno desea, pues los chimane sólo tienen lo que necesitan. No tienen más provisiones que el arco y las flechas y el material para hacerlos. Uno necesita la olla para cocinar y no siempre se tienen dos. Cada mujer tiene su bolsa para cargar de la que no puede prescindir. Los chimane sólo elaboran un nuevo objeto cuando lo necesitan y nunca antes."

^{iv} One might like to include the ethnography of Alfred Métraux. Writing after Nordenskiöld's publication, Métraux (1942, p. 488) said Tsimane' still made fishhooks from the splinters of animal bones, implying not much had changed. I oppose his qualifications as a reliable observer because I cannot tell how much fieldwork – if any – he did among Tsimane', or if he relied on the reportage of others, including those of his mentor Nordenskiöld (Rivière, 2010).

^v Here is a personal anecdote with no claim to universality but illustrative of the point I am making. I was once chatting with a Tsimane' man in a village when a woman walked by, far from where we were speaking. The man pointed to the woman and said in a matter-of-fact way she was wearing his shirt. He explained he had left his shirt to dry in his courtyard and the woman had taken it without asking his permission. I noticed no detectable anger in the man's story. More commonly, I have seen Tsimane' perturbed at not finding their moored canoe because a villager had used it to cross the river or do an errand without asking the owner.

^{vi} Even if we had coded for spousal co-ownership, we would have had to decide how much of the asset each person owned. In the five-quarter panel study of two villages (September 1999–November 2000) we coded for co-ownership of assets (Reyes-Garcia, 2001), but we did not continue the practice, probably because we found it hard to apportion the share of the asset owned by claimants.

^{vii} I chose the Gini coefficient because it has well-known desirable properties, is widely used, and because it eases comparison with other studies.

^{viii} Assuming a discount rate of 5%, no investment costs, and assets yielding a perpetual stream of income, then gross assets worth \$612 would translate into a daily income of \$0.08 per adult [$\$0.08 = (\$612 * 0.05)/365$].

^{ix} Gurven et al. (2010, pp. 52, 58) surveyed 361 households and computed a Gini coefficient for the total value of shotguns, rifles, watches, radios, bicycles, and domesticated animals. They found a Gini coefficient of 0.32.

^x See the discussion by Kaiser et al. (2017) on approaches to measure wealth in non-industrial societies.