China's Missing Consumption

GK Dragonomics
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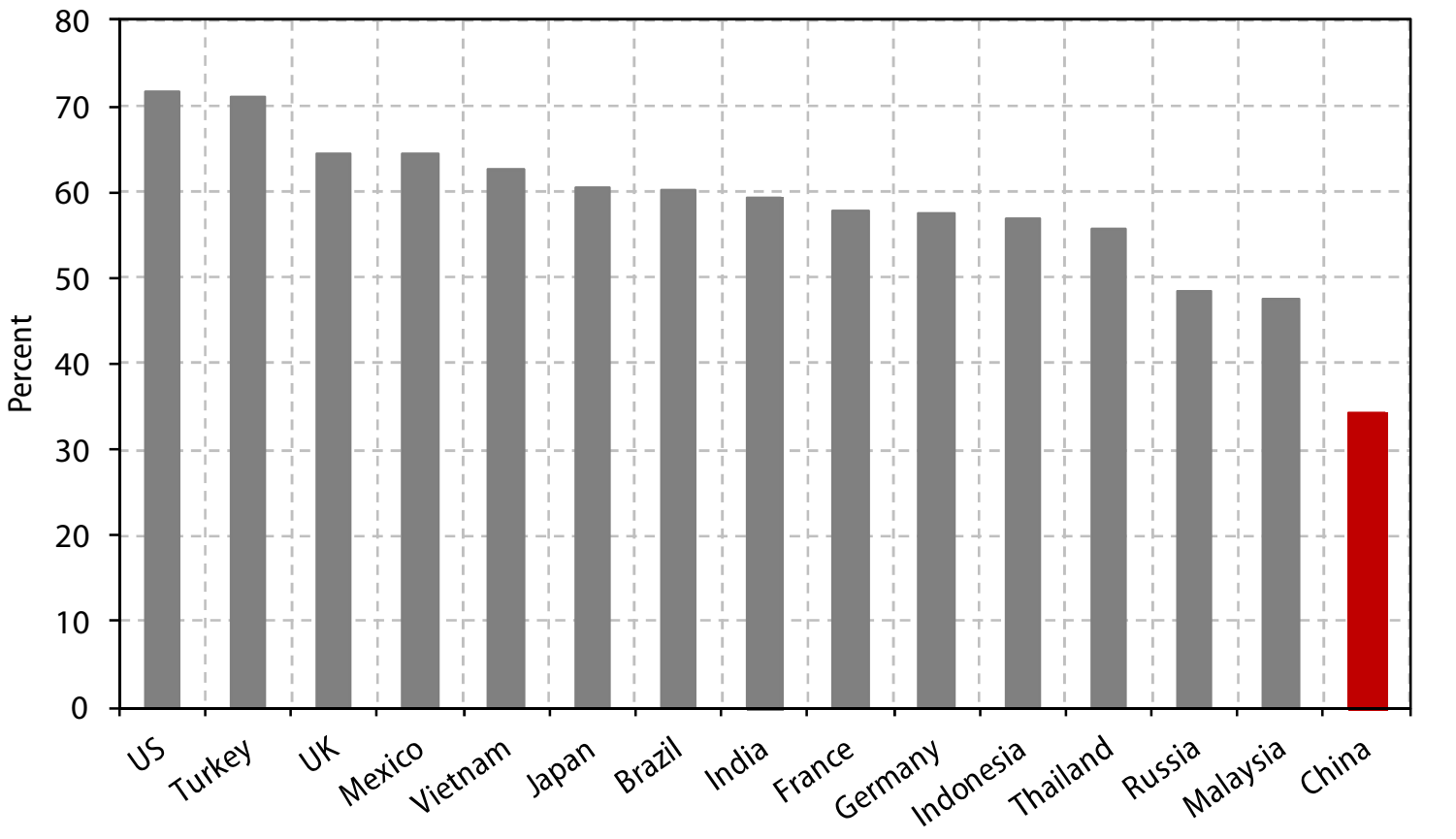
Is something wrong with China's consumption numbers?



China's ratio of household consumption to GDP is extremely low at 35%, making it an outlier among major nations (50-60% is more common). The low consumption share is one of the key indicators of the imbalances in China's economy.

But both Chinese government officials and outside analysts have questioned whether the consumption imbalance is as bad as the numbers show. There are some doubts about the accuracy of official data: retail sales for instance have outpaced household consumption, and surveys may not capture the consumption patterns of the nouveau riche. So is there a hidden trove of Chinese consumer spending that statisticians are missing?

Introduction: The underestimation debate

Some analysts have suggested that the real share of household consumption in China's GDP is anywhere from 5 to 15 pp higher than the official national accounts show, or actually 40-50%. The main arguments of those alleging that consumption is under-estimated fall into three categories:

a) Survey techniques can't keep up with the rapid development of the service sector
b) The household survey doesn't capture the wealthiest households, and the rest lie about what they spend
c) Aggregate consumption statistics are inconsistent with retail sales figures and company reports

While all three of these arguments have elements of truth, and there are indeed flaws in the data, we do not think that the official consumption data is completely misleading. The household survey records day-to-day spending on basic items effectively, and NBS makes appropriate adjustments to the survey data to account for major services consumed by households, such as healthcare and financial services. In an appendix to our main presentation (starting on slide 16) we also explain in detail why we don't think the retail sales figures can be used to replace the consumption data.

Our comparison of the official consumption data with numerous other indicators leads us to conclude that **the issues with national consumption data are actually quite limited.** And the scope of those problems may be surprising. We find that **the consumption of household appliances, furniture, cars and mobile phones in the national accounts is implausibly small** when compared to readily available sales figures from other channels.

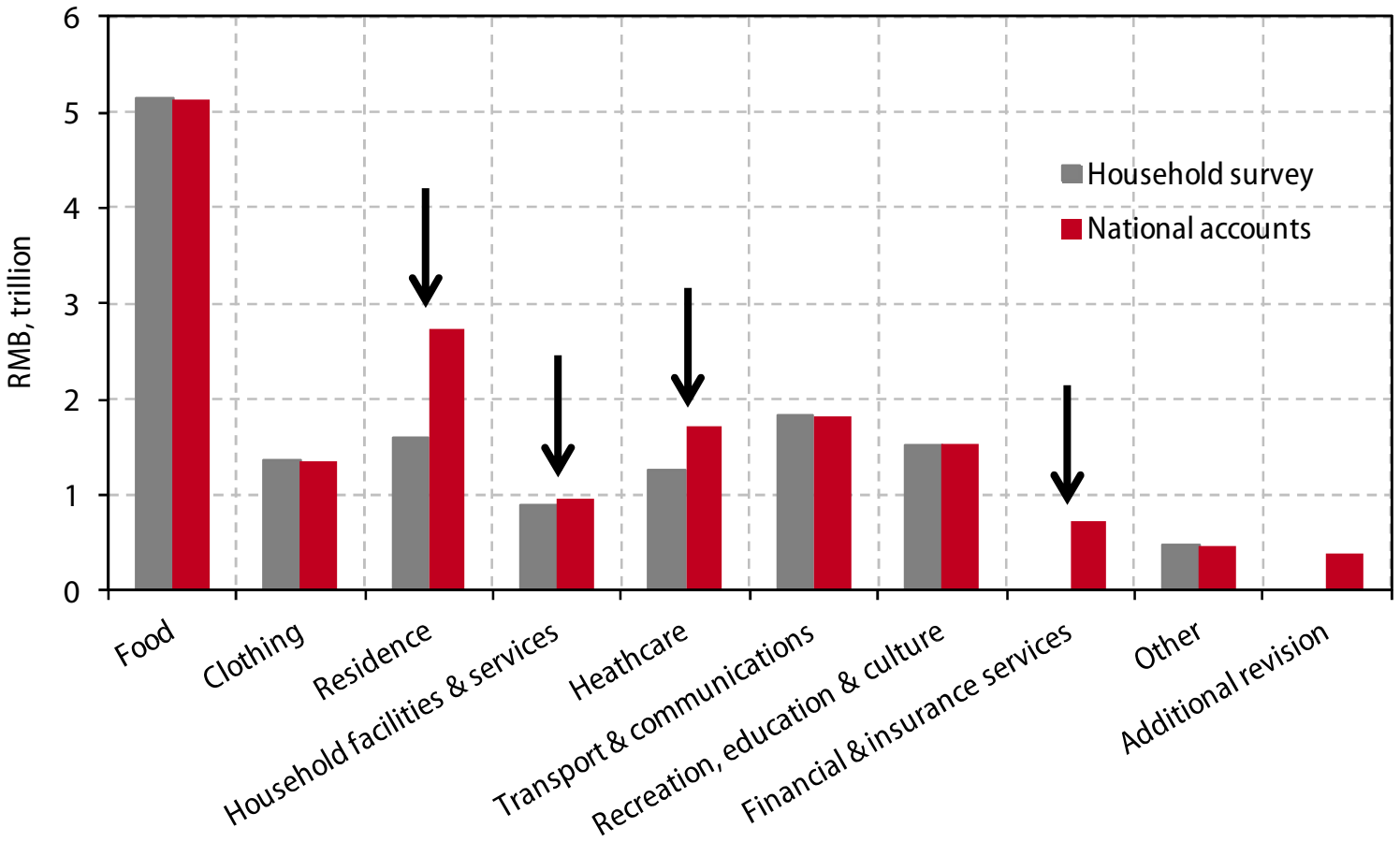
We believe that this discrepancy is due to a specific weakness in the household survey methodology that means newly formed households are under-represented, just at the point when they are most likely to buy these goods. The NBS also probably under-estimates the value of owner-occupied housing and tourism, though in fairness both of these are rather difficult to measure.

Adjusting for these discrepancies leads to a rise of 3-4 pp in the household consumption share of GDP, to approximately 39% in 2011. While sizable, such an adjustment does not alter the fundamental trajectory of China's investment-driven economy. Most importantly, there is no need to abandon the official figures in order to track the shorter-term development of the consumer economy. China's household survey remains the best timely source of consumption data, though it should be supplemented by more focused indicators covering the areas where it is weak.

Making the sausage: where China's consumption data comes from

NBS adjusts household survey data in four key categories

China's household consumption by category, 2011



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Household consumption in the national accounts is based on the household survey, which tracks the spending habits of133,000 households across urban and rural China by category.

NBS adjusts the survey figures to include consumption that households do not pay cash for, including the use of owner-occupied housing, household services (cleaning, childcare) and healthcare. NBS also adds a financial services category.

The total figure for household consumption is still bigger than the sum of all categories (by Rmb401 bn in 2011), an indication that NBS makes additional revisions to include consumer spending on services not captured by the survey.

These adjustments are clearly necessary, but we think they are not sufficient.

Finding the gaps in the household survey

The household survey comprises three data-gathering techniques: a daily diary, a monthly questionnaire and interviews. This daily diary (记账) provides extremely detailed data on **food** spending, and the rural survey compensates for the food farm households grow to eat themselves. Therefore we see no obvious reason to doubt the data in this category of consumption.

The official figures for consumption of clothing also look perfectly fine. NBS states that Rmb1.4 trn was spent by households on **apparel** in 2011. Data from Euromonitor, which aggregates company and industry reports, suggests Rmb1.5 trn for total spending on apparel in 2011. As this would also include some non-household spending, there is little discrepancy here.

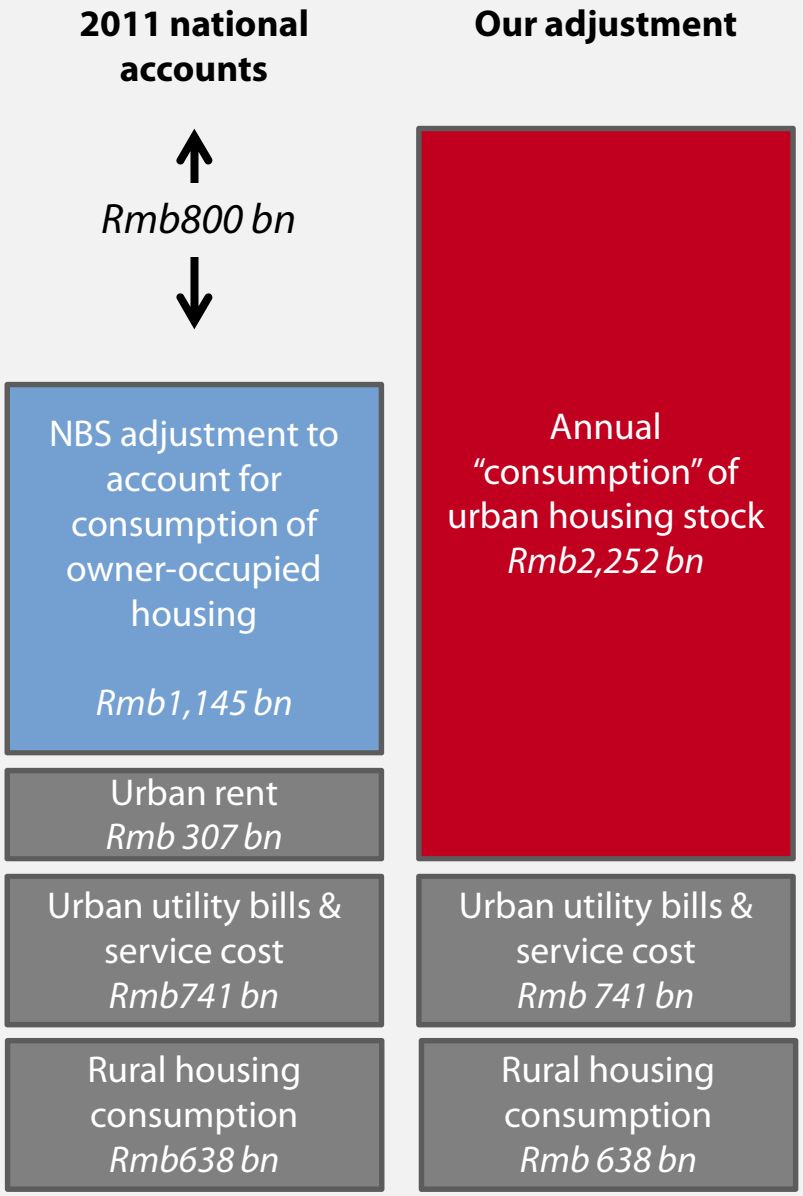
NBS also estimates that households consumed Rmb736bn of **financial services and insurance** in 2011. The imputed cost of financial services in the national accounts is not directly observed but constructed according to detailed rules. Our own rough calculations* suggest imputed consumption of Rmb450 bn of banking and Rmb500bn of insurance. This is close enough to the official figure for us to accept that NBS' more comprehensive method is accurate.

Consumption of **healthcare and education services** is another area in which it is difficult for outside analysts to challenge the NBS figures. When households consume healthcare and education, they pay for some of that service directly, and the rest is subsidized by government through various mechanisms. So the actual price of a given service is usually not observable. And much of this subsidy element is defined in national accounting terms as an element of government consumption, and should not be added to the household consumption bucket. NBS does make an adjustment to the survey data for consumption of healthcare services, and we do not have any data that would suggest this adjustment is inappropriate. We also accept NBS figures on the education subcategory of the recreation, education and culture category.

The remaining categories of household consumption are where spending is most likely to be under-estimated. Enough detail and third-party data is available here to compare different figures and assess the consistency of the national accounts with other indicators. Such a comparison shows there are plenty of odd things going on, as the following slides will show…

* Consumption of banking is roughly equal to (the net interest margin **x** household deposits) divided by two. The cost of intermediation is shared by borrowers and lenders (depositors). Insurance is a trickier calculation but is roughly premium income **minus** claims and provision for life reserves.

The housing adjustment

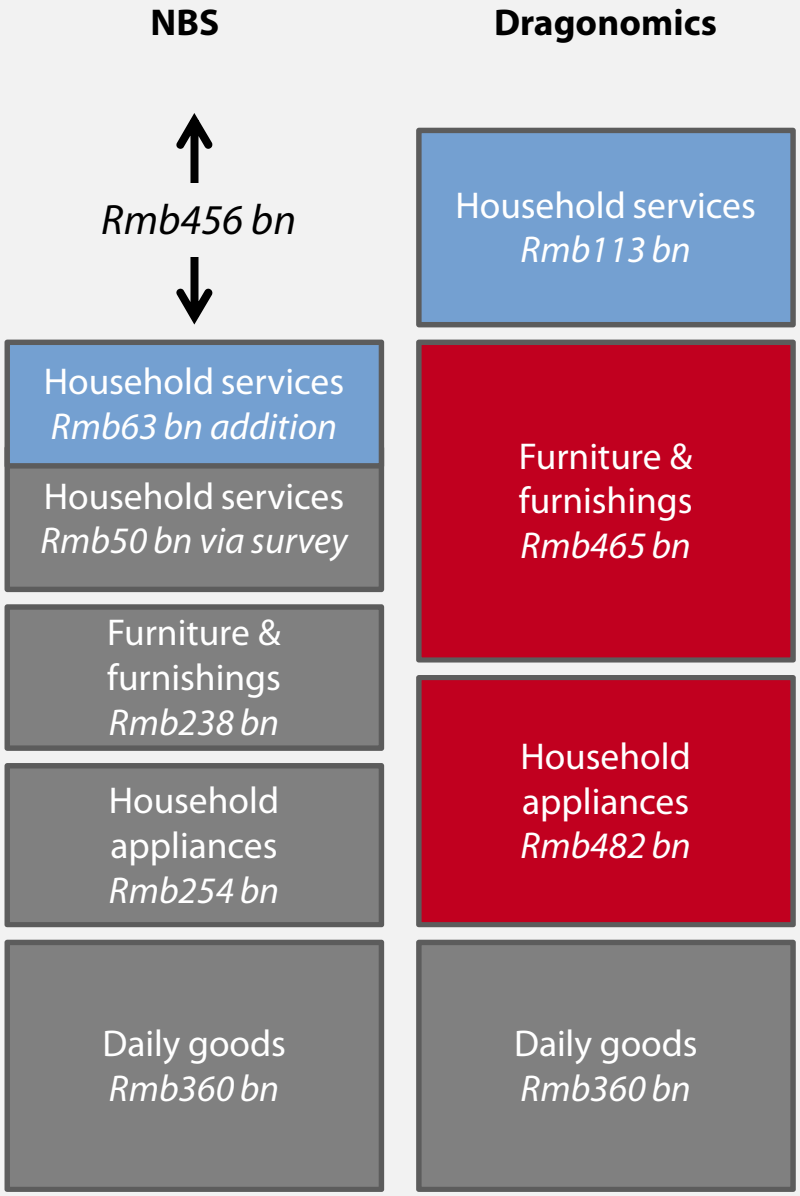


Measuring the consumption of "housing services" by people who own their home is always tricky. Since rental markets are small in China, estimating an "owner's equivalent rent" is difficult. Instead NBS estimates the consumption as the depreciation of the value of the home.

This is a reasonable alternative, but NBS' use of historical construction costs rather than current value, and an over-generous assumption of the useful life of housing, have been criticized by several scholars. Tellingly, the value of housing services estimated by NBS did not rise as a share of GDP between 2004-2009 despite a major housing boom.

So it seems likely that housing services are under-estimated, but by how much? Our model suggests the total value of the urban housing stock in 2011 was Rmb56 trn. Assuming a 4% depreciation rate (for a useful life of 25 years), Rmb2.25 trn of urban housing was consumed that year. This includes both rented and owner-occupied housing. **Using our housing stock model would add Rmb800 bn to household consumption, a 4.8% increase.**

The household goods adjustment



The household survey report of "daily goods" consumption (such as cleaning and hygiene products) looks broadly accurate. The household survey is set up well to capture these kind of purchases, and its figures match reasonably well with the industry and corporate sales figures compiled by Euromonitor.

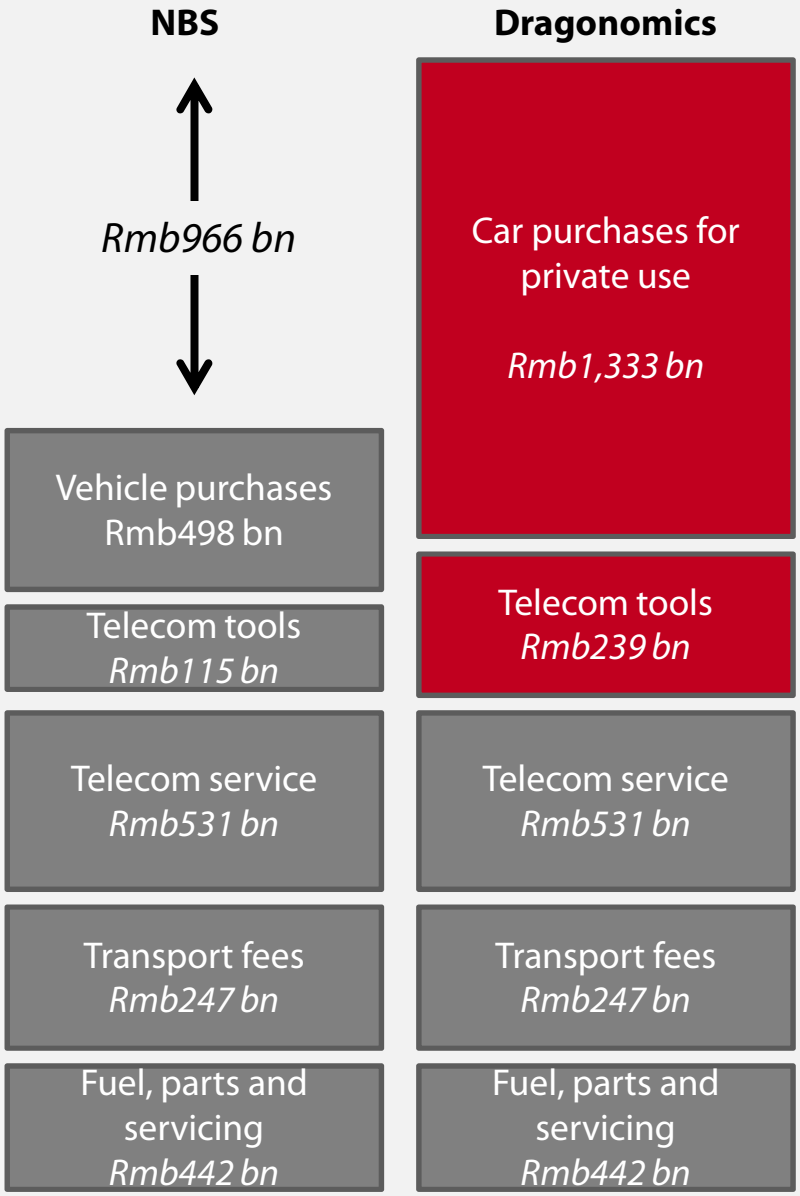
However, the Rmb254 bn reported for household appliance consumption looks low. Euromonitor estimates that Rmb482bn worth of household appliances were sold in 2011; this figure accords better with effective domestic demand derived from production figures for refrigerators and washing machines, and we therefore prefer it.

Euromonitor figures also show that Rmb465 bn of furniture and furnishings were purchased in 2011, which is 95% higher than the NBS estimate. While there is no foolproof way to assess which figure is more accurate, we prefer the Euromonitor number. If the household survey is under-estimating appliance purchases, then it is probably also under-estimating the furniture bought along with them.

Finally, household services (in other words, cooking, cleaning and childcare) are also difficult to measure and could be underestimated. The labor ministry estimates 15m people worked in household service in 2011; if they worked half-time at an average monthly wage of Rmb1,500 (around the minimum), this works out to Rmb135 bn. This is close enough to the Rmb113 bn in the national accounts that we think the NBS estimate is accurate.

Our adjustments to appliances and furniture bring the household facilities and services category to Rmb1.4 trn for 2011, some 51% higher than the NBS estimate. **This adds 2.8% to total household consumption.**

Transportation and communications, part 1: cars

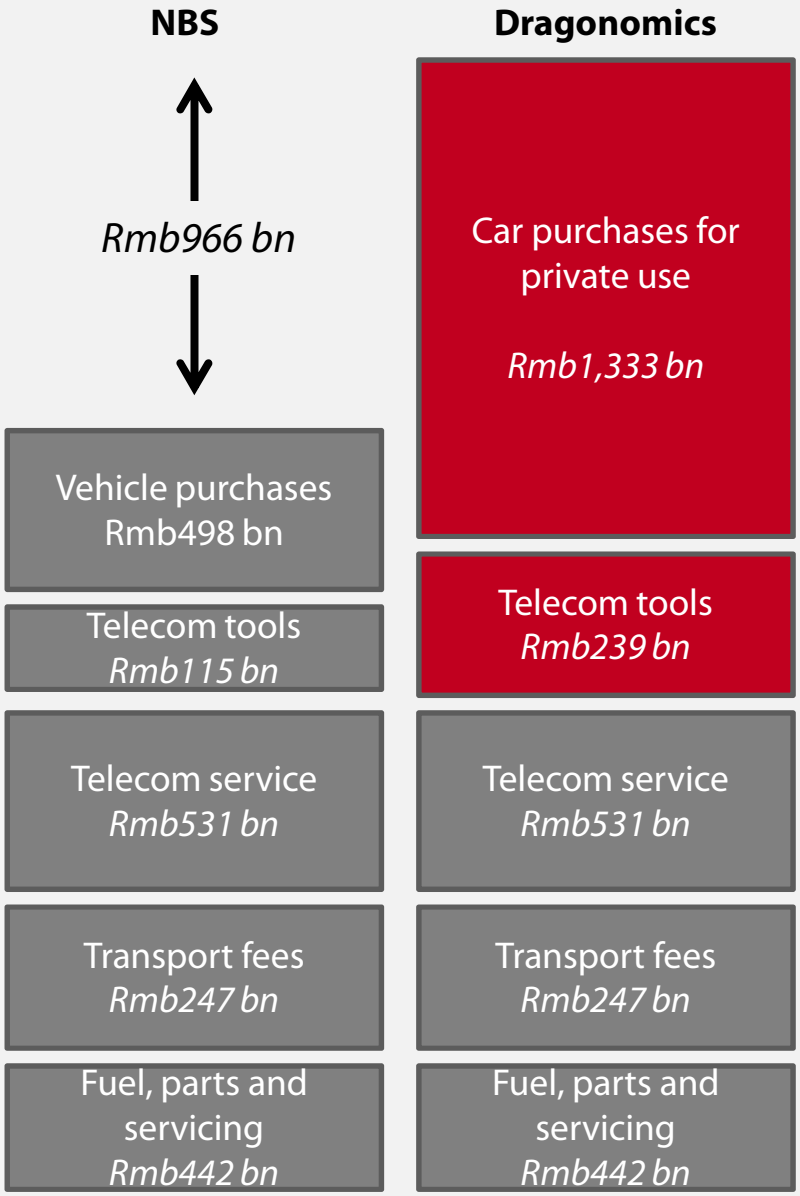


The transportation and communications category includes two of the most important and closely-watched consumer goods in China: cars and phones. So it may seem unlikely that consumption of these products would be underestimated. And NBS makes no adjustments to this category, taking the household survey figures directly into the national accounts.

In fact, **we find some of the biggest discrepancies between NBS data and market reports precisely in purchases of cars and phones.** Though it seems counter-intuitive, it turns out there are good reasons why statistics on these products are problematic: both are relatively infrequent, big-ticket purchases which the household survey struggles to capture, and they are both also a common form of in-kind compensation.

Data on car purchases and ownership is extensive and reasonably consistent. The China Association of Automobile Manufacturers reports that 14.5m passenger cars were sold in 2011; some of these were sold to businesses or government, so this looks consistent with the Ministry of Transport's figures showing the stock of privately owned passenger cars rose by 12.5m in 2011. However it is difficult to reconcile this with the Rmb498 bn figure for vehicle purchases in the household survey. If correct, this would mean the average car cost Rmb39,840, or US$6,225—a totally implausible figure. The average price of a domestically-made passenger car in 2011, according to NDRC data, was Rmb105,000 (not far off industry sources which show the average price of the 10 best-selling models was Rmb99,000). Multiplying 12.5m cars by a price of Rmb105,000 each gives a total vehicle consumption of about Rmb1.3 trn, some 170% higher than the household survey.

Transportation and communications, part 2: phones



The discrepancy between national accounts and market reports is not quite as severe for mobile phones, but it is still sizable. Euromonitor records Rmb239 bn in retail sales of mobile phones in 2011, compared to the Rmb115 bn in household spending on "telecom tools" recorded by the household survey.

Data on mobile phone sales in China is readily available: Apple sold 8.4m iPhones in 2011, which would generate around Rmb50 bn in sales, while Samsung sold 13m somewhat cheaper smartphones for perhaps another Rmb50bn. These two companies alone almost match the household survey's Rmb115 bn without considering the other 223m (albeit much cheaper) phones sold in China that year. So we are forced to conclude that the national accounts are too low.

The other sub-categories of transportation and communications do not seem problematic, however. Spending on telecom service aligns well with the revenues of the major telecom operators, and transport fees and costs also seem reasonable based on our own estimates.

So our adjusted total for transportation and communication is Rmb2.8 trn for 2011, some 53% higher than the NBS estimate. **Together our adjustments to cars and phones add Rmb966 bn to household consumption, raising it by 5.9%.**

Why does the household survey miss big-ticket spending?

How could China's statisticians fail to accurately count some of the biggest components of consumer spending? We believe that the sampling structure of the household survey may systematically miss certain types of infrequent big-ticket item purchases.

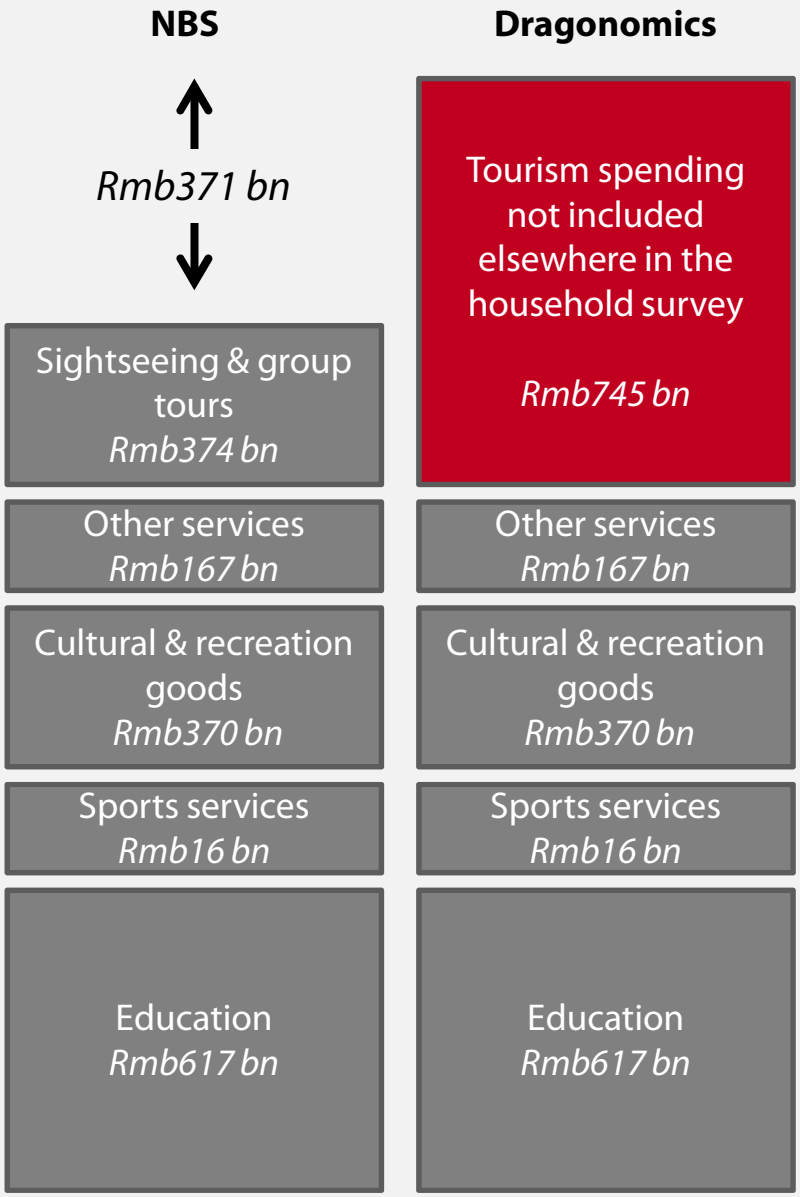
The secondary housing market in China is as yet small, and the majority of home purchases in China are of newly built apartments. The typical purchasers of a new apartment are young couples in the process of forming a new household. Chinese apartments are usually purchased unfurnished, so couple will need to buy new home appliances, furniture and furnishings before or soon after they move in. Car sales are also strongly correlated with new house purchases.

Why might this be a problem for statisticians? The household survey sample is made up of three cohorts: one-third are in their second year of surveying, one-third are in their third year and the remaining third are new responders, drawn from the population at large. By definition, only that final third can include newly formed households of the sort described above.

This means that such households are likely to be systematically under-represented in the survey sample. While households in their second or third year of being surveyed can certainly also be buying new houses and the associated goods, they are still less likely to be doing so than a new household just being set up.

We believe then that **the household survey methodology fails to capture a big chunk of spending by newly formed households on cars, appliances, furniture and furnishings**, and that this explains at least part of the gap that we are attempting to bridge with our adjustments.

The recreation, education & culture adjustment

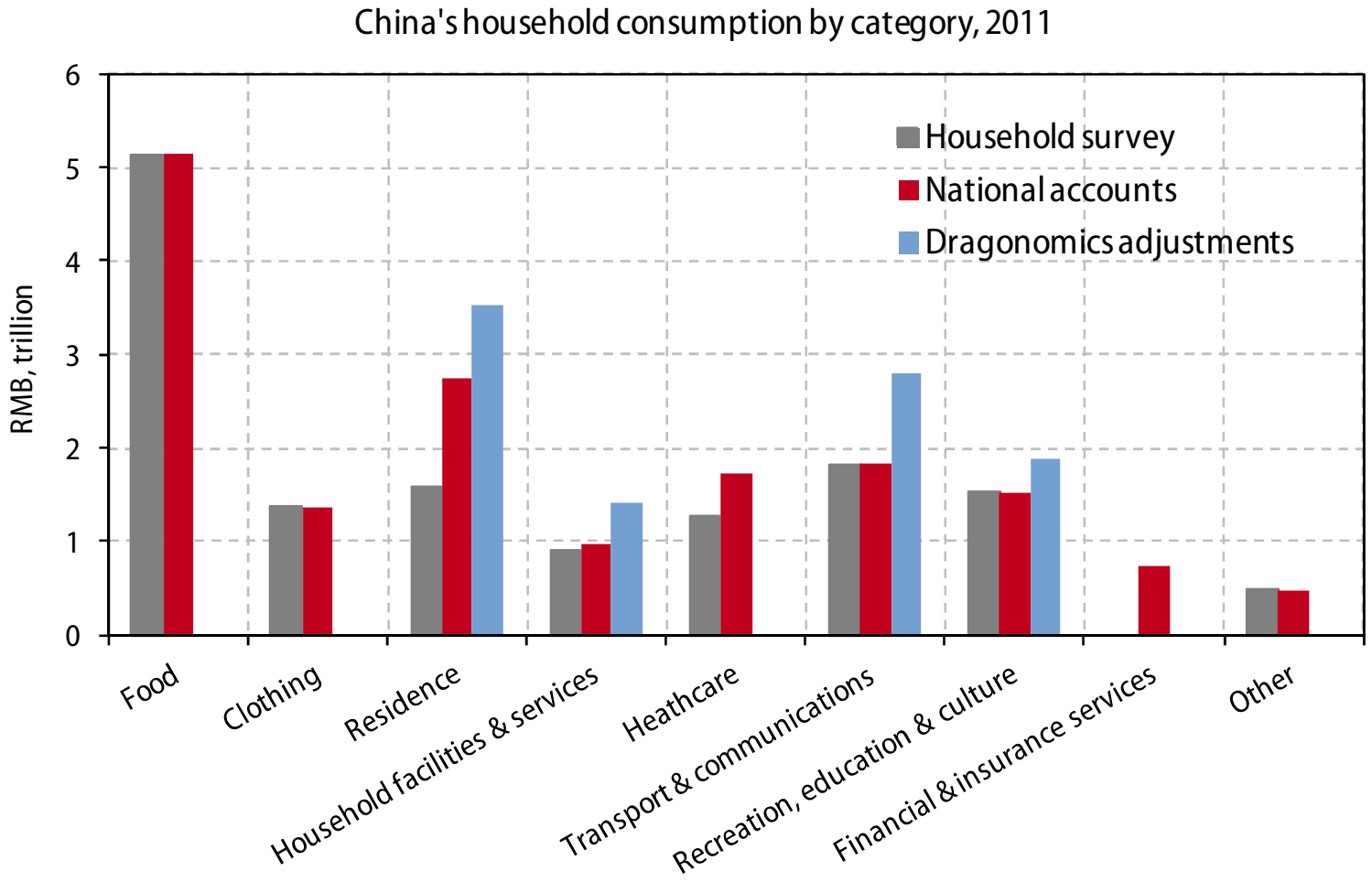


This broad category of the household survey includes a range of different services that are difficult to measure. The biggest question mark is on domestic tourism expenditures (China's national accounts, following standard practice, count overseas tourism as an import of services in the balance of payments, so it is not included in aggregate household consumption).

The only direct mention of tourism in the household survey is the sub-category for "sightseeing and group tours," which is Rmb374 bn in spending in 2011. Many analysts cite the National Tourism Administration's figure for Rmb1.93 trn in 2011 domestic tourism as evidence that this area is grossly underestimated. But only 70% of this figure is private tourism rather than business travel, bringing the number down to Rmb1.35 trn. And there are lots of other categories in the household survey that could contain some tourism-related spending (for instance the "hotels & beauty services" or "transport fees" subcategories). After extensive checking of Euromonitor's figures on tourism spending by component, we think the household survey may underestimate tourism spending by anywhere from zero to Rmb743 bn. We conservatively take the midpoint of this range and add it to the sightseeing category in the household survey. **This addition of Rmb371 bn increases household consumption by 2.2%.**

Summary of adjustments

Under-counted consumption is concentrated in a few areas



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Altogether, we find three major areas where China's national accounts likely understate consumption:

- The value of services derived from owner-occupied housing
- Purchases of home appliances, furniture, cars and phones
- Domestic tourism

Our combined adjustments to remedy these understatements amount to Rmb2.6 trn in 2011, or a 16% increase.

However we also believe the NBS' subsequent revisions to total household consumption (made after their first GDP estimate) are an attempt to account for some of these discrepancies, and likely overlap with our adjustments.

Therefore we deduct the Rmb401 bn revision for 2011, leaving an adjustment of Rmb 2.2 trn, or a 13% increase.

Where is the missing consumption hiding?

If China is under-counting consumption, is it also under-counting its total GDP? Quite possibly yes.

Some of the extra household consumption that we identify is likely to be completely missed by official accounts, and therefore should be added to GDP. This is most likely to be the case for consumption of services: definitely for imputed consumption of owner-occupied housing, and very likely for the missing tourism spending. NBS officials do acknowledge that gaps still exist in their collection of data on the service sector, but the size of these gaps has been declining over time. While NBS has revised the size of the service sector in 2004 and earlier years by more than 40%, revisions for more recent years have been closer to 2%.

Yet while household consumption of some goods and services does seem to under-stated, it is much less likely that the *output* of these goods and services is missed by Chinese statisticians. But instead of being treated as final household consumption, some of this spending may be treated as a cost of production. This could be the case, for instance, with in-kind compensation by companies who provide employees with cars, mobile phones or gym memberships. Firms may report this as an expense rather than as the compensation it actually is. If this spending was instead treated as final consumption, it would add to total GDP. Another possibility is that such spending is treated as corporate investment or government consumption in the national accounts. One example of this might include cars purchased by the government which are really for private use. Changing this kind of spending to final household consumption in the national accounts would increase the consumption share of GDP, but would not change total GDP.

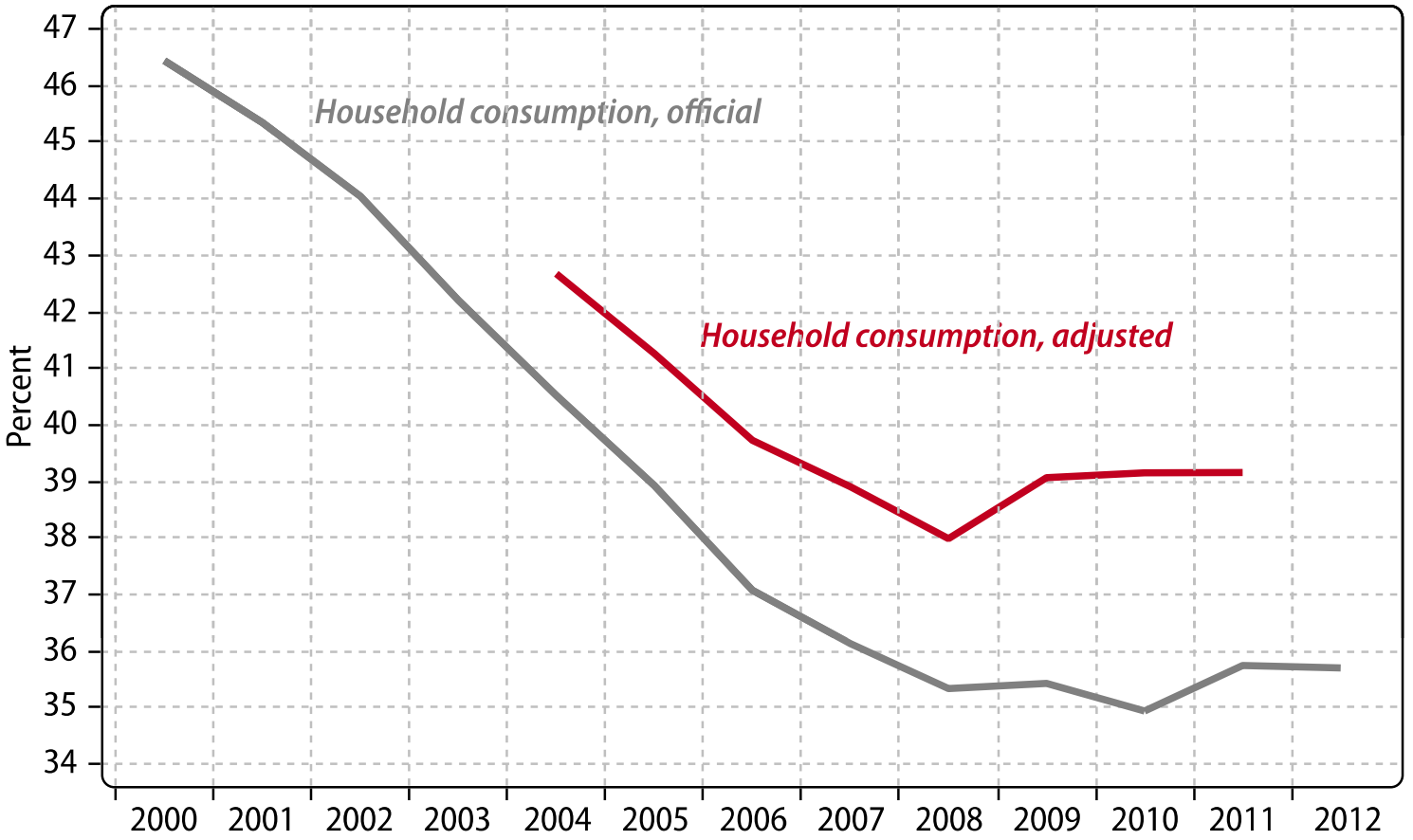
It is very difficult for us to tell how much of the missing household consumption we identify fits into each of these three categories. Consequently it is hard to know how much of that consumption should be added to top-line GDP and how much should be simply moved from other parts of the national accounts.

This uncertainty makes it tricky to settle on a final number for the household consumption share of GDP, since our adjustments affect both the numerator and the denominator. The best we can do is indicate a range: **our estimate is that after NBS's most recent revision of national accounts, the household consumption share of 2011 GDP was underestimated by 2.8 to 4 pp.**

Household consumption is consistently underestimated

The adjusted household share is higher, but the story is the same

Share of GDP, NBS reported and Dragonomics adjusted



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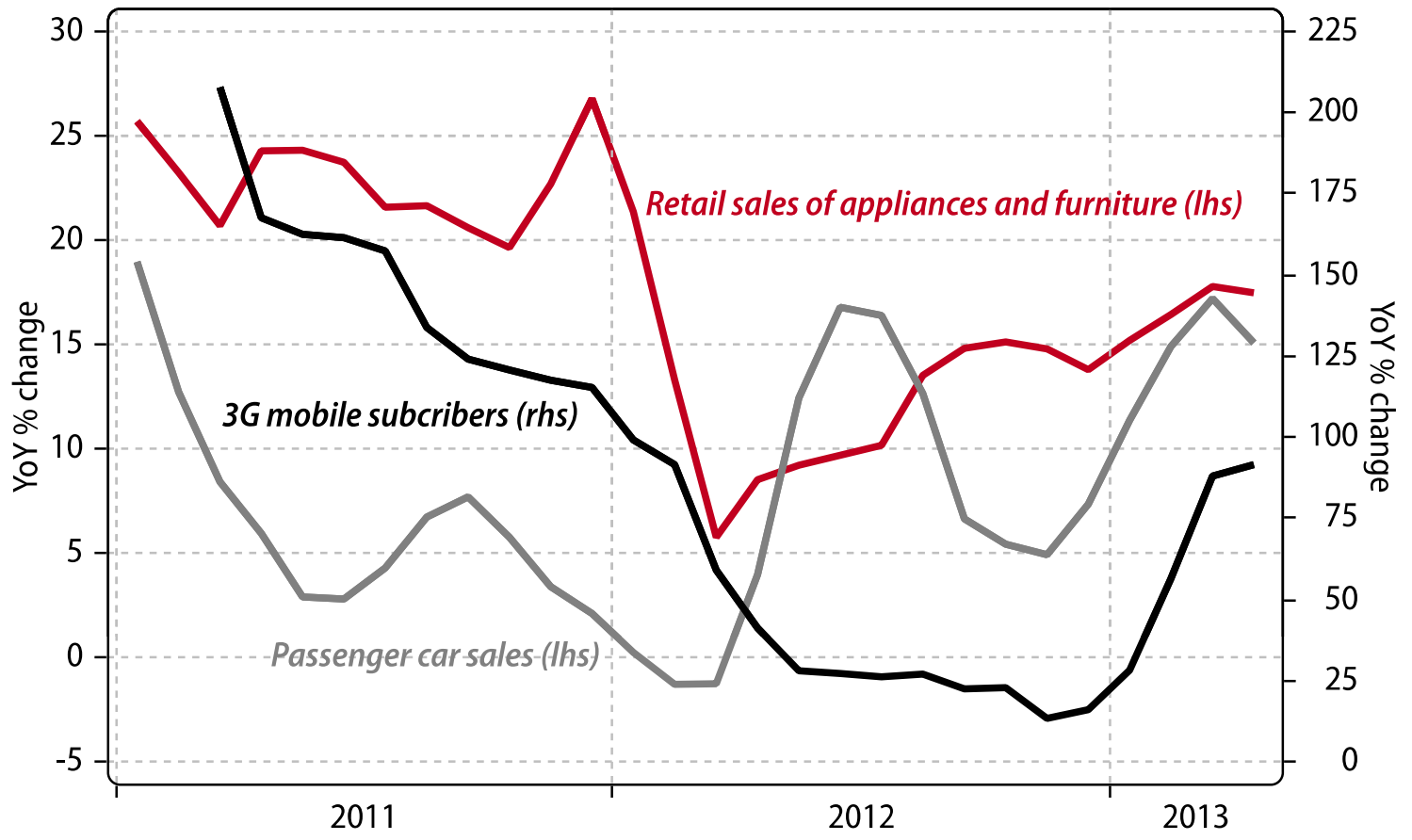
Extending our analysis back to years prior to 2011 shows that the extent of the understatement of household consumption is similar in previous years. However the gap has gotten wider recently: the effect of under-counting housing services and tourism is much bigger since 2008 due to the rapid growth in these segments of spending.

Even this systematic adjustment to China's national accounts does not change the fundamental story of an economy heavily driven by investment growth. Our adjusted household share of GDP still leaves China an outlier among major economies: it is more than 10 pp below Korea and 15 pp below Germany and Japan.

How to track China's actual consumption growth



Sadly, the data we have used here to adjust household consumption in the national accounts is neither frequent or timely enough to be useful in keeping track of shorter-term changes in consumption trends.

Fortunately , there is high-frequency data on sales of cars, household appliances and mobile phones that can easily supplement the quarterly household survey reports.

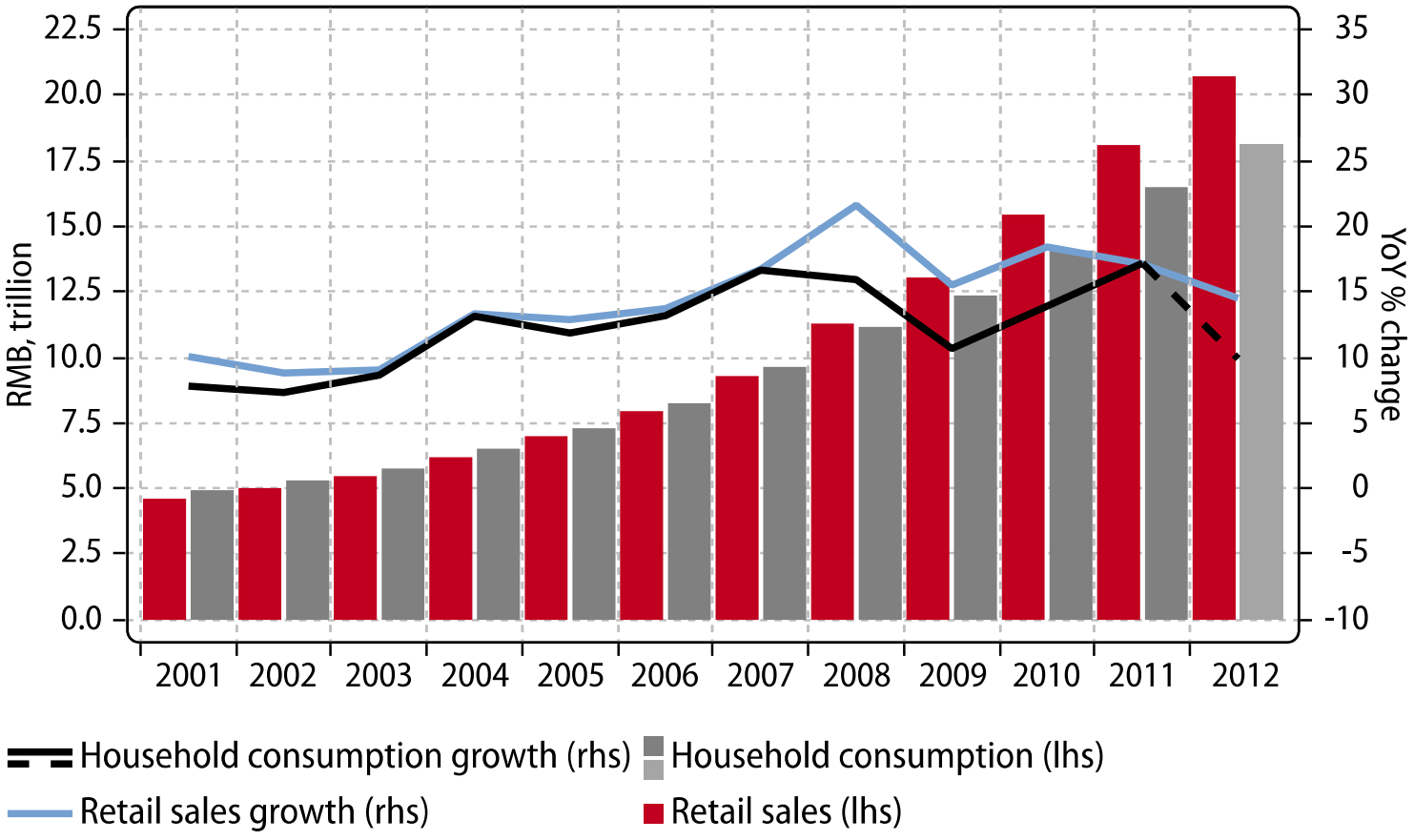
Compensating for the household survey's deficiencies was particularly important in 1Q13. While the household survey showed weak consumption, our supplementary indicators saw much stronger growth, suggesting the real trend is more balanced.

Appendix: the trouble with retail sales

Why do consumption and retail sales differ?

Two major indicators of China's consumer spending have diverged

Retail sales and household consumption expenditure, level and growth rate



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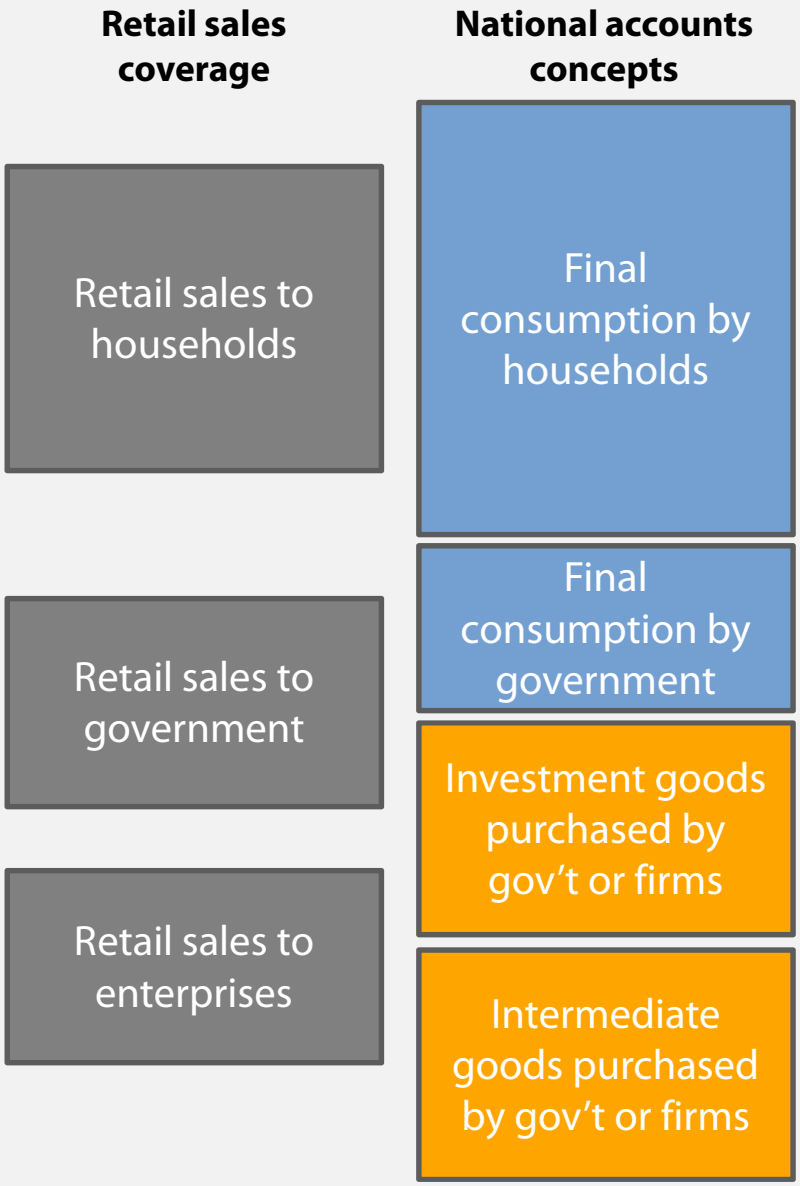
Why do we go to all this trouble to adjust household consumption in the national accounts, when there is another widely-used measure of consumer spending available? We're talking of course about the official retail sales data, which many analysts prefer to use.

Household consumption in the national accounts was larger than retail sales 2001 through 2007, but since 2008 annual retail sales have been larger than household consumption. This is one reason why household consumption is thought to be under-stated.

But retail sales are not a simple substitute. Though there is overlap, consumption and retail sales measure different things.

So what's the big difference?



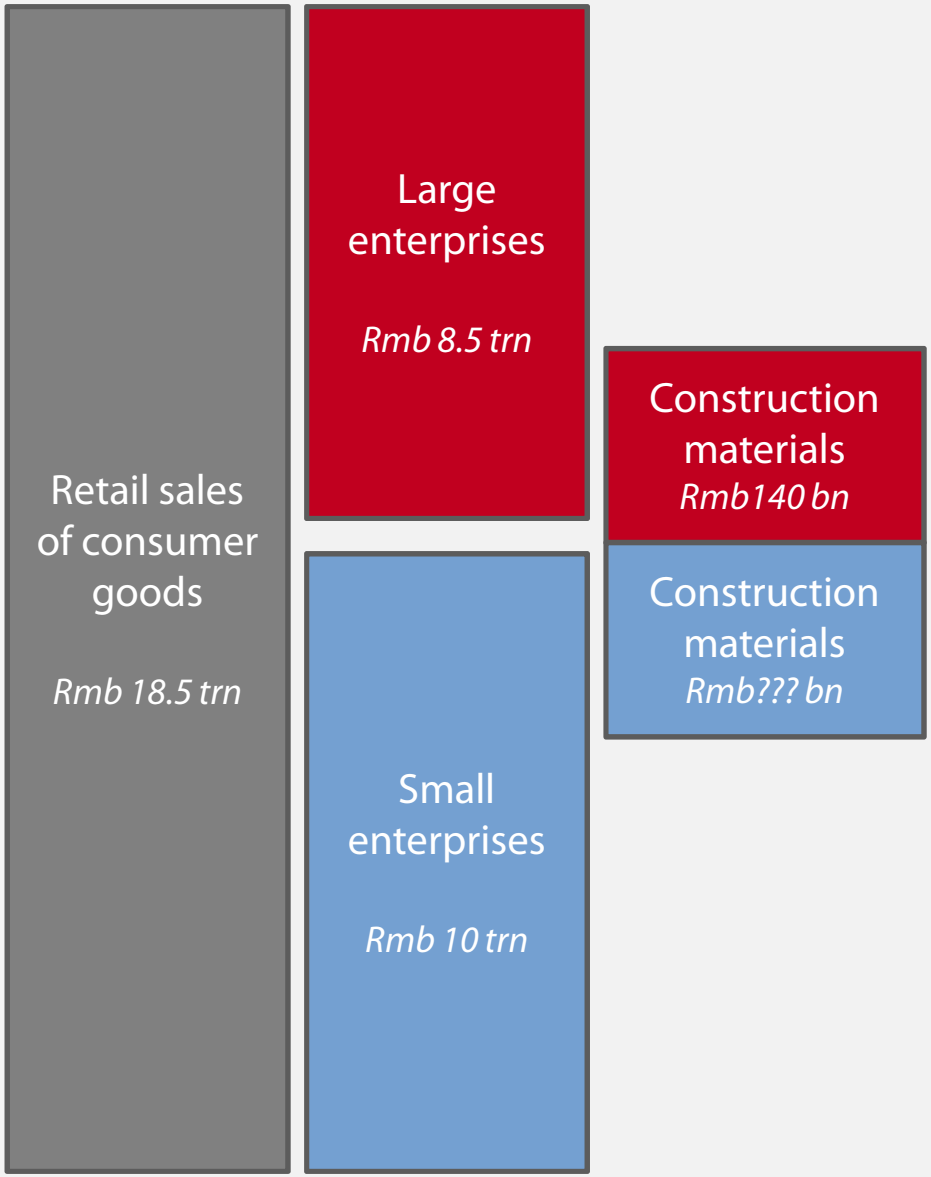
Household consumption in the national accounts measures all consumption activity by households, whether they pay for it or not, and for both goods and services.

Retail sales, on the other hand, is an aggregate of all the sales receipts of "retail enterprises," mainly retail shops but also including wholesalers and restaurants. These **sales figures do not and cannot distinguish between sales to households, to government entities and to other enterprises.**

The spending by government and firms captured will be either 1) on investment goods, 2) on goods that are used in the course of producing goods and services, or 3) on in-kind benefits to households. The first two are not household consumption, but the third is; unfortunately it is difficult to split up the actual data in this way because there is no real way to determine who is doing the buying and for what purpose.

Retail sales data therefore includes both household consumption and several other parts of the national accounts. This data series then, is a useful tally of *spending* in the economy, but **includes much more than just *household* spending, and much that does not even qualify as *consumption*.**

Why it's hard to remove non-household consumption from retail sales



Retail sales could be a more useful measure of household consumption if we could only strip the non-consumer pieces out of it. Some analysts, such as Yiping Huang at Barclays, say it is possible to do just that by excluding certain categories of goods which are not usually purchased by households.

There are two main problems with this idea:

1) It is hard to choose the right categories to exclude. Construction materials is an easy one, but it represents less than 2% of total retail sales . Huang also suggests petroleum, but that begs the question of how households are to fuel their new cars. Office supplies are lumped together in the data with "cultural" products, making them difficult to strip out.

2) Category-level data is only available for a subset of retail sales: those from large enterprises which represent less than half of the total sales value. If you subtract the total for the "construction materials" category from retail sales, you are subtracting only the sales of those goods through large retail outlets. The remainder still includes some unknown amount of construction materials sold through smaller retail outlets.

In our view, the best reason to be skeptical of this strategy is that NBS itself has abandoned it. Prior to 2004, NBS based its household consumption estimate on retail sales. But they gave up and switched to using the household survey their main tool. Why? They cited the impossibility of adequately removing non-household sales from total retail sales. If NBS could not do this reliably with full access to the raw retail sales data, it seems unlikely that outside analysts with less information would be able to…

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Please contact us or your GaveKal representative with any questions or comments.

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