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Consumption: a Chinese puzzle

Summary: Everyone wants to know about the Chinese consumption story. We have spent much of the past two months digging into it and can report that:

- The consumption share of GDP is almost certainly **four to five points higher** than official figures suggest.
- The macro-economic corollary is that the investment rate is probably four or five points lower than official figures suggest. Therefore investment- and trade-led growth is sustainable for another couple of years, without the risk of a crippling buildup of excess capacity that will have to be cleared by a severe recession or a long period of sub-par growth. In any case we believe we are past the peak of the investment cycle.
- The main reason for under-reporting of consumption is a statistical system biased towards measuring investment. The biggest specific biases are under-counts of the service sector, of low-level retail goods sales, and of the urban population.
- Private consumption has been depressed since the late 1990s because a diversion of household expenditure into pent-up housing demand. This pent-up demand is almost exhausted, so consumption growth will almost certainly continue to strengthen over the next several years.

BUT… before you get too excited about a "Chinese consumption boom," remember what we told you in our last note before Christmas ("Consuming China: pretty fictions, hard facts," 14 December 2006):

- The vast majority of Chinese consumption expenditure is subsistence-level purchases of basic necessities by households that spend less than US$5,000 per year. Most of this spending is completely irrelevant for foreign retail and consumer-goods firms (though perhaps somewhat relevant to sellers of agricultural commodities).
- The effective level of consumption that is commercially relevant to foreign firms (or even for large domestic firms) will continue to be constrained by: low average levels of household wealth; limited household credit; precautionary saving for medical and retirement expenses; and the geographic dispersion of the consuming class, which raises unit distribution costs.
- Chinese consumer markets are hyper-competitive, and will remain a high-volume-growth, low-profit story for some years to come.

Roll up your sleeves

In this inquiry we will make three major claims. First, Chinese data on consumption are so defective that it quite difficult, and perhaps impossible, to state precisely what share consumption has in GDP and how fast it is growing (although we will brave an effort on both counts). Second, we can confidently state that there are many excellent reasons why consumption is understated in the national accounts, and none to suggest that it is

overstated. We therefore conclude that the consumption rate is higher than reported. Assuming the current account surplus to be more or less accurately measured, the inexorable corollary is that the investment rate is underreported; and so the story of excess investment and inadequate consumption in China, though not wholly wrong, is overstated. Third, consumption growth has recently accelerated, and will continue to do so, thanks to structural factors. These factors are largely independent of the government's much-publicized efforts to stimulate consumption, which are mainly political exercises designed to keep Washington critics at bay.

Retail sales doesn't measure consumption…

China publishes three measures of consumption. The most frequently reported is "total retail sales of consumer goods," published monthly. As we observed recently ("China retail: a nation of shoppers?", 27 November 2006), despite its name this series is really a broad measure of all goods purchases throughout the economy. It includes both final purchases by consumers and intermediate purchases by enterprises and government; and it omits all services. To derive consumption from it one must subtract the intermediate purchases and add in services. Since it is difficult to know for sure which is larger (intermediate purchases or services), or what the relative growth rates of the two are, it is very problematic to use retail sales as a proxy for either the size or the growth rate of consumption.

What we can say with certainty is that the omission of services is a serious matter. For purposes of comparison we have looked at household consumption of services in several other Asian countries. Definitional differences make it hard to put a summary conclusion into a pretty chart, but a couple of examples should make the point. South Korea, which keeps quite good numbers, saw services rise from 30% of household expenditure in 1970 to 56% today. The earlier figure is more relevant since Korea's real per capita GDP is rather closer to China's current level. (Incidentally, Korea makes a pretty good comparison for China because it has a comparably niggardly social welfare provision. It is, for instance, the only major economy where the state share of education spending is lower than China's 60%. Trends in household expenditure on education and health should therefore be similar to China's.) Data from Thailand, whose per-capita income is about the same as China, are a bit harder to interpret but suggest that services make up at least 30% of household expenditure. These comparisons suggest that 30-40 percent of Chinese household expenditure is likely to be on services, a figure ratified by a Chinese data set we will examine below.

The other thing we can say with certainty is that China does a very poor job of measuring services from the production side. The economic census, which did a detailed measurement of the 2004 economy, revised upward the value-added contribution of the service sector by 49%. There is pretty good evidence, however, that even this revision was too low and that in the past two years tabulation of service sector output has again fallen substantially behind reality.

The key lies in provincial GDP numbers, mocked for years because, like the children in Garrison Keillor's mythical Minnesota town, all provinces managed growth rates above

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Figure 1.
Three measures of consumption, 1995-2006
Rmb bn

		1995	2000	2004	2005	2006e
Private consumption	(PC)	2,837	4,585	6,383	7,091	8,026
Retail sales	(RS)	2,361	3,911	5,950	6,718	7,625
Household survey	(HS)	2,371	3,644	5,553	6,370	7,304
Difference, RS-PC, %		-16.8	-14.7	-6.8	-5.3	-5.0
Difference, HS-PC, %		-16.4	-20.5	-13.0	-10.2	-9.0

Note: 2006 figures estimated by Dragonomics based on nine-month data.
Source: NBS, CEIC, Dragonomics estimates.

the national average. But the census revealed that the sum of provincial GDP as originally reported in 2004 was actually much closer to national GDP as discovered by the census than were the original national GDP figures. (The original provincial data added up to 19% more than the original national data; the census revised the original national data up by 17%). Crucially, provinces were shown to have done a much better job of recording service activity than the national government, – although even the provinces turned out to have missed quite a bit in this area.

Why is this relevant now? Because in 2005, the year after the census, the gap between national and provincial data opened up once again: the sum of GDP as reported by the provinces was 8 percent higher than the national GDP figure. The National Bureau of Statistics, rather than deferring to provincial data as the evidence would suggest that it ought to, angrily denounced the "false" provincial figures. We will go with the track record and assume as a baseline that the Chinese economy was at least 8 percent larger in 2005 than the national figures suggest, and most probably more; and that this upward revision mainly reflects services trade.[1]

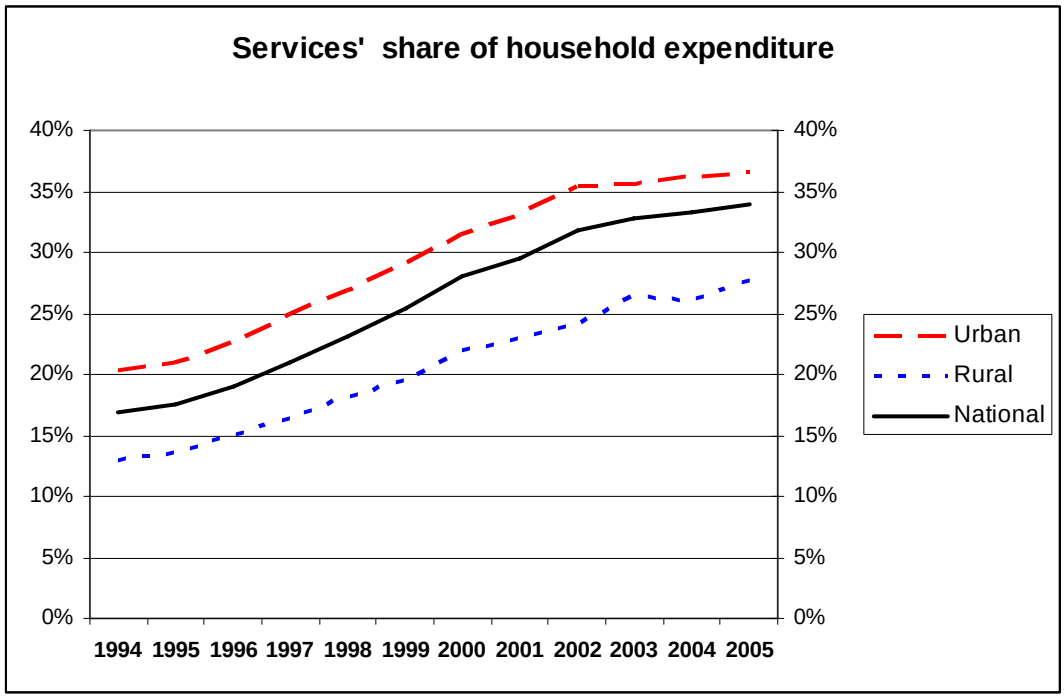
…and neither does the household survey

The second measure of consumption is the household survey of urban and rural per-capita expenditure, which is conducted quarterly and published with a significant lag. This data has two merits: a) it captures spending on services, not just goods, and b) it is collected by random sample survey, so is presumed to be somewhat more statistically robust than the retail sales data, which rely more heavily on direct reporting by enterprises and therefore miss a lot of small-scale activity. One drawback is that it reports spending on a per-capita basis, so in order to generate aggregate consumption figures one must multiply the urban and rural per-capita figures by the estimated urban and rural population. When one does this, as we have done in Figure 1, one discovers that not even Chinese statisticians believe that the survey accurately measures aggregate private consumption: in 2005 estimated private consumption was 10% higher than aggregate spending according to the survey.

We will get to some possible reasons for that in a minute, but first let us look at what the survey says about household spending on services. The spending categories reported in

[1] For all the gory details on the economic census and its (qualified) vindication of provincial data, see Carsten Holz, "More numbers games," in *China Economic Quarterly*, Q3 2006, pp. 40-44).

Figure 2.



Source: NBS, CEIC, Dragonomics estimates

the survey do not differentiate clearly between goods and services, so we have had to make some educated guesses. As Figure 2 shows, we find that between 1995 and 2005 services rose from 21% to 37% of the urban spending basket, from 13% to 28% of the rural basket, and from 17% to 34% of the average national basket. The numbers for 2005 seem plausible, corresponding as they do with the data from Thailand and South Korea. We remain agnostic as to whether the doubling of services' share in household spending in the past decade more reflects the blossoming of the service economy or the improved ability of the survey to capture service spending; it is probably a bit of both. In any case, as a rule of thumb one is probably justified in assuming that about a third of household expenditure in China is now on services. Thus if one came up with an estimate of household goods purchases based on the retail sales series, one would have to increase it by about 50% to obtain an estimate of overall household consumption.

The bigger question, however, is how accurately the survey measures aggregate household consumption. As noted, government statisticians believe it is at least 10% too low, for reasons that are not made clear. We suspect the shortfall is much greater than that, for two reasons.

First, there appears to be a reporting bias in the way the survey is collected. NBS sends out its survey teams during working hours Monday to Friday, and all surveys are done in person. As a result, the members of the household who are earning most of the money, and probably spending most of it too, are in many cases not filling out the surveys: non-working family members or retired parents frequently do the job. Add to this the likelihood that for most people the temptation would be to underreport both income and expenditure, just in case the survey forms happened to fall into the tax man's hands.

A second potential source of bias is structural. As we noted, aggregate urban and rural expenditure figures are generated by multiplying the per-capita numbers in the survey by the reported urban and rural populations. One has to calculate the urban and rural aggregates separately because of the vast discrepancy between urban and rural per capita spending (in round figures, Rmb8,000 and Rmb2,600 respectively in 2005). But what if the urban and rural population figures are wrong? Precisely because average expenditures are so much higher for city-dwellers than for farmers, an undercount of the urban population share could lead to a larger underestimation of aggregate consumption.

Officially, China's population was 43% urban in 2005. There is, however, considerable lack of clarity as to the accuracy of this number. Before the 2000 census, the official urban population count included only people with urban *hukou* (residence permit). Migrant workers with rural hukou did not count, even if they had lived in a city for years. Neither did rural-hukou residents of suburban areas swallowed up by recent city expansions. In theory, the 2000 census solved that problem by counting as urban anyone who had lived in a city at least six out of the previous 12 months. In practice, suspicions remain that the census figures low-balled the 2000 urban population; or even if that number was right, estimates for subsequent years do not capture the full extent of rural-urban migration, which has almost certainly accelerated as a result of the 2002-2006 investment boom and the consequent large increase in construction and manufacturing jobs typically filled by migrants.

Here we enter the realm of speculation. Each 1% increase in the urban population ratio translates into a 1.1% increase in aggregate consumption as measured by the household survey. Lacking enough demographic data we will not nail our flag to any particular estimate of the urban population. But a 3-5 percent underestimation of the urban population share, and a corresponding underestimation of aggregate consumption, is by no means an unreasonable conjecture. Conversely, there is almost no valid reason for believing that official figures exaggerate the size of the urban population.

The biases all point one way

Time now to take a breath and sum up our conclusions so far:

- Significant biases in the retail sales and household survey numbers suggest that both series underestimate aggregate consumption. Retail sales misses a lot of low-level goods purchases and omits service expenditure; the household survey appears to have a reporting bias and may also underestimate the urban population.
- There are no obvious biases that would lead published numbers to overestimate consumption. (And one can come up with several anti-consumption biases other than those we have discussed, most notably the likelihood that enterprises are in the habit of booking staff bennies, such as car purchases, as "investment.")
- On the production side, the 2004 economic census provided clear evidence that China's statistical system massively underreports service activity.
- The census also showed that provincial numbers provide a more accurate estimate of GDP than national figures do, and in 2005 aggregate provincial GDP was 8% higher than reported national GDP.

Figure 3.
2005 GDP corrected for under-measurement of service consumption

	As reported		GDP	GDP
	Rmb bn	% of total	8% higher	12% higher
Production side GDP	**18,387**		**19,977**	**20,593**
Agriculture	2,307	13%	12%	11%
Industry	8,737	47%	44%	42%
Services	7,346	40%	45%	46%
Expenditure side GDP	**18,670**		**19,977**	**20,593**
Private consumption	7,091	38%	42%	44%
Government consumption	2,601	14%	13%	13%
Capital formation	7,956	43%	40%	39%
Net exports	1,022	5%	5%	5%

Source: Dragonomics estimates based on NBS data

In other words, there is a lot of evidence which when put together suggests that the official national accounts in 2005 underestimated GDP, mainly because of a failure accurately to measure consumption of services.

Crossing the finish line

This brings us at last to the third, and theoretically "authoritative" consumption measure: the private consumption line in the national expenditure-side GDP accounts, published annually. Officially, this number is created by "reconciling" the retail sales and household survey data. As Figure 1 shows, the net effect of this reconciliation is a figure somewhat higher than both the retail sales and household survey data. The gap has closed substantially since the late 1990s, but even so in 2005 retail sales and household consumption fell respectively 5% and 10% shy of the final estimate of total consumption.[2] This implies that national statisticians are aware of the biases we have enumerated above and have endeavored to correct for them. The question is, have they made a big enough correction?

We think not. The basic rationale is laid out in Figure 3, which follows through with our premise that GDP in 2005 was at least 8% higher than officially reported, using provincial data as a guide. We further assume (rather simplistically) that the entire amount of "hidden" GDP represents private consumption of services. For the more adventurous we also include a column making an upward revision of 12%. Personally we believe this is entirely reasonable, but we fear that our arithmetic gymnastics have probably already stretched your credulity to near the breaking point, so we will focus on the 8% revision.

The result of this manipulation is that the private consumption share of GDP rises from 38% to 42%, and the investment share falls from 43% to 40%. The consumption share is still on the low side and the investment share on the high side by international standards, but the numbers are less outlandish than the official ones, particularly if we accept (more

[2] Idle folk with enough spare time to review the exact methods by which the retail sales and household survey data are converted into private consumption figures may consult "National accounts for China – sources and methods," OECD, 2002 (http://www.oecd.org/dataoecd/44/1/1850377.pdf), pp. 49-54.

Figure 4.
Private consumption and capital formation as share of GDP

	Private consumption	Gross capital formation	Of which: inventories
Avg 1978-87	50.8	35.3	6.5
Avg 1988-96	47.1	38.0	7.5
Avg 1997-2005	43.5	38.4	2.3
1997	45.2	36.7	
1998	45.3	36.2	
1999	46.1	36.2	
2000	46.4	35.3	
2001	45.2	36.5	
2002	43.7	37.9	
2003	41.7	41.0	
2004	39.8	43.2	
2005	38.0	42.6	
2006e	36.7	42.4	

Source: NBS, Dragonomics estimates

on this in a minute) that we are now past the peak of the investment cycle and that the investment ratio is likely to fall gradually over the next few years.

What lies in store

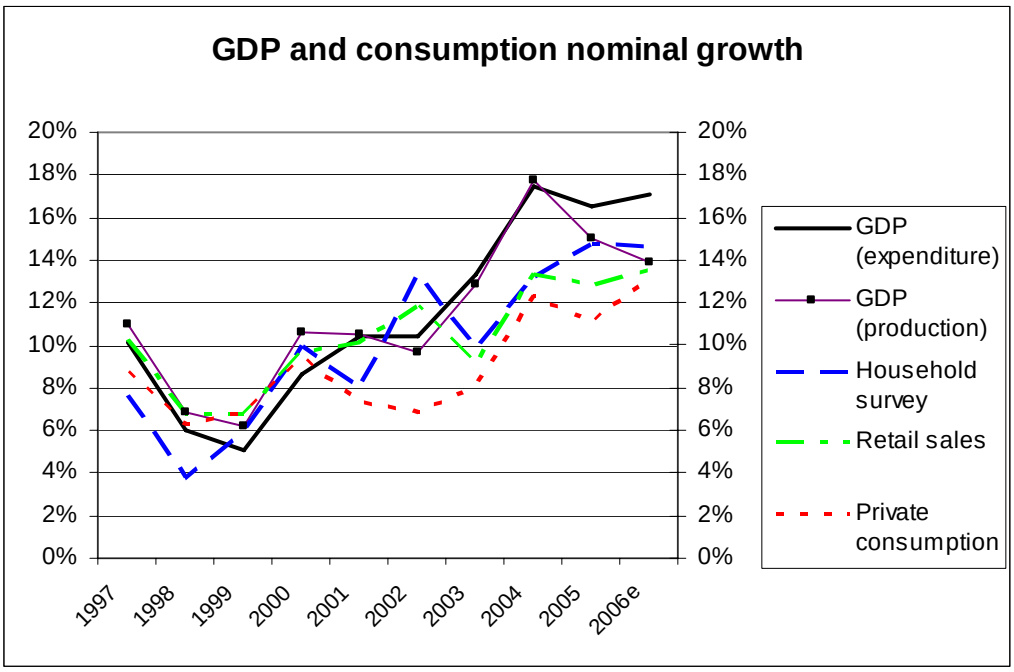
Given the number and complexity of our assumptions we have not dared to extrapolate the figures backward to create a time series, but to our skeptics we promise to use our adjusted figures for 2005 as a baseline for an alternate GDP series which we will publish in tandem with the official numbers, beginning with 2006. If we are correct then our series ought to prove of greater explanatory value than the arbitrary numbers spat out by NBS each quarter – admittedly we are setting the bar a bit low.

But it is still important to make a stab at the trend questions: even if consumption was higher in 2005 than the government claims, how fast is it growing and is it rising or falling as a share of GDP? For this part of the discussion we will retreat to official figures and employ our usual assumption that the trends are roughly accurate even if the absolute numbers in a given year are not.

Figure 4 shows official figures on the investment and private consumption share of GDP since 1978. Figure 5 tracks the three official consumption numbers against GDP growth for the past decade. A couple of things are worth noting. First, the average investment share of GDP for the nine years 1997-2005 was almost exactly the same as in the preceding nine-year period (1988-96). Both periods include an investment boom and an investment bust. So it could be argued that, considered over an entire cycle, China's recent investment performance is nothing particularly extraordinary. If anything, the recent cycle is far healthier than the previous ones because the contribution of inventory build-up is far smaller than in the past.

On the consumption side, there appears to have been a continuous slide in the private consumption share of GDP since the early 1980s. This was very modest through the 80s and 90s but then accelerated sharply beginning in about 2002. This pattern is consistent

Figure 5.



Source: NBS, Dragonomics estimates

with two stories: first, that China's economy has become ever more skewed towards investment; or second, that consumption has risen faster than the government's ability to measure it.

Another story that we find fairly compelling is that recent private consumption trends reflect a shift of household expenditure away from daily consumption items and into investment in housing. This began on a large scale in the late 1990s with the privatization of the housing market, when households finally got the chance to buy the housing that they had previously rented at subsidized rates from their state work units. This process gained speed in the early part of this decade. It is fair to assume, however, that by now the pent-up demand for housing is exhausted and that urban households, having loaded up on mortgage debt a few years ago, are now enjoying a rebound in spending power thanks to incomes that are growing at 10% a year, while mortgage payments (thanks to stable interest rates) remain more or less fixed.

If true, this would suggest that consumption growth, which by all measures has lagged GDP growth for the last several years, is poised for a recovery. All consumption indicators have been rising quite smartly in the past couple of years (see Figure 5), but they still have not caught up with GDP. If true, this means that consumption continues to fall as a share of GDP. Our expectation is that this trend is about to be reversed, and that perhaps as early as 2008 – though more likely in 2009 or 2010 – nominal investment growth will start to lag GDP while consumption growth pulls ahead of it. This shift will have a great deal more to do with ordinary structural and cyclical factors than with the

government's much ballyhooed, and relatively contentless, efforts to stimulate consumption. But like all governments, the denizens of Zhongnanhai will not be shy about taking credit for the shift.