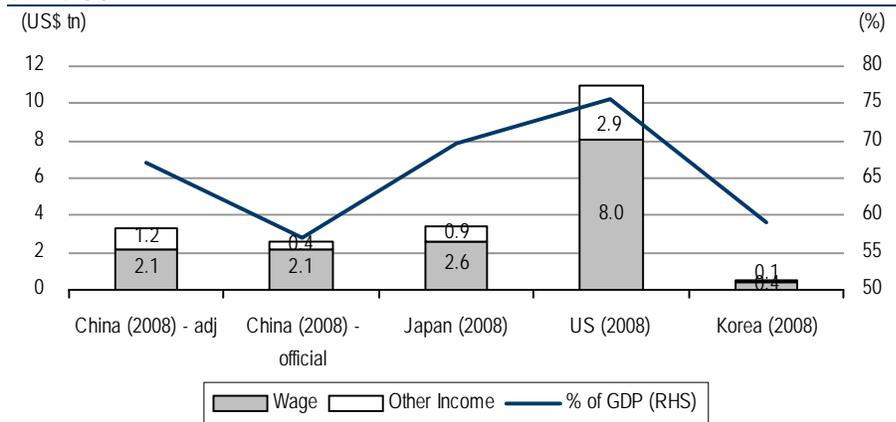


# Analysing Chinese Grey Income

Expert Insights

## New study, new findings

Figure 1: China's adj. income distributed to households is only less than that of the US



Source: Prof. Wang's Study, NBS, CEIC

Credit Suisse has sponsored Professor Wang Xiaolu of the China Reform Foundation in his second study of China's grey income and income distribution:

- **Almost Rmb10 tn in hidden income, or 30% of GDP.** Based on a creative survey technique focusing on the correlation between income and spending patterns, and with over 4,000 samples across 19 provinces in China, Prof. Wang estimates that the per-capita disposable income of urban Chinese households in 2008 should be Rmb32,154, 90% above the official data. Total hidden income could total Rmb9.3 tn, 30% of GDP, with about 63% of hidden income in the hands of the top 10% of urban households.
- **The potential of China's consumer market is even bigger than we expected.** Most investors are aware that Chinese income statistics are underestimated, but the exact amount is subject to much speculation. The size of grey income revealed by Prof. Wang is striking and could help investors to understand the rationale of the Chinese government's recent strong push for faster wage growth and a more equitable income distribution pattern – which would also help boost overall consumption.
- **Big ticket items are the biggest beneficiary.** While we think that the Chinese government will try to reduce this huge income disparity problem and the size of the grey income, this is not likely to change significantly in the near future. Chinese property, European luxury goods, high-end retailing and Macao gaming could be the biggest beneficiaries of the current income distribution pattern. In particular, we think BMW, Galaxy, Hang Lung Properties, Mengniu, Swatch and Vanke will benefit most.



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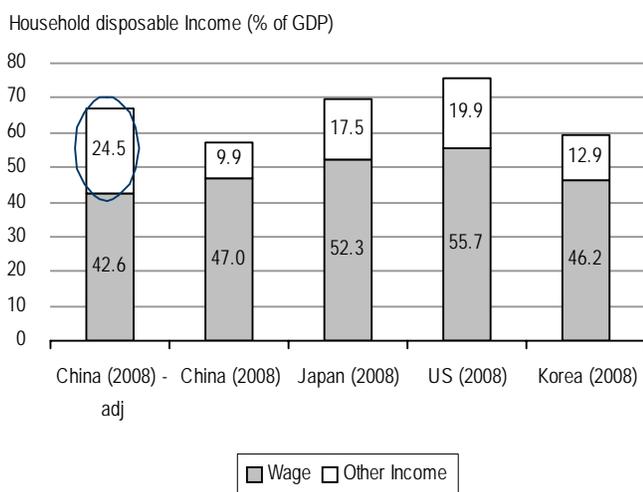
# Focus charts and tables

**Figure 2: Comparing Wang's study to the official data**

(2008) Household distribution	Per-capita disposable Income (Rmb p.a.)			% of hidden income
	Official data (1)	Wang's study (2)	(2)/(1) %	
Bottom 10%	4,754	5,350	113	0.4
10-20%	7,363	7,430	101	0.0
20-40%	10,196	11,970	117	2.3
40-60%	13,984	17,900	128	5.1
60-80%	19,254	27,560	143	10.9
<b>80-90%</b>	<b>26,250</b>	<b>54,900</b>	<b>209</b>	<b>18.8</b>
<b>Top 10%</b>	<b>43,614</b>	<b>139,000</b>	<b>319</b>	<b>62.5</b>
<b>Total</b>	<b>16,885</b>	<b>32,154</b>	<b>190</b>	<b>100.0</b>

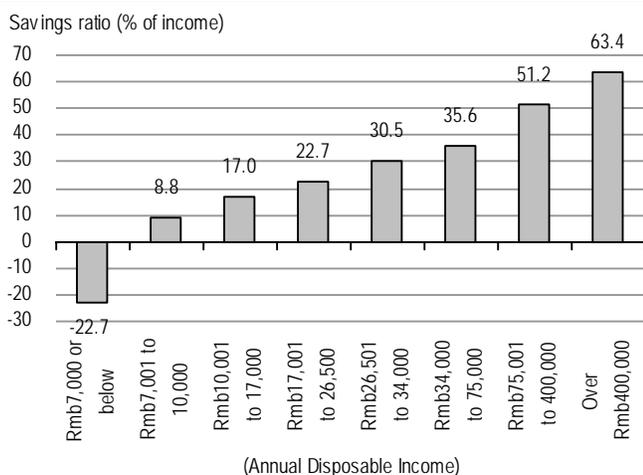
Source: NBS Prof. Wang's Study, Credit Suisse estimates

**Figure 3: Large share of non-wage income in China**



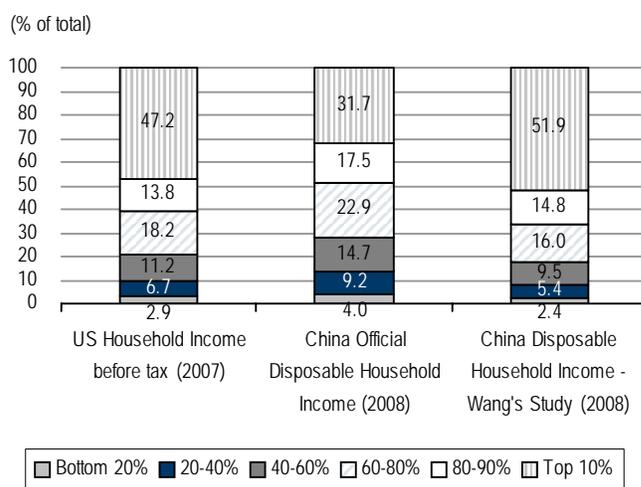
Source: Prof. Wang's Study, NBS, CEIC

**Figure 5: Savings ratio differs a lot between rich and poor**



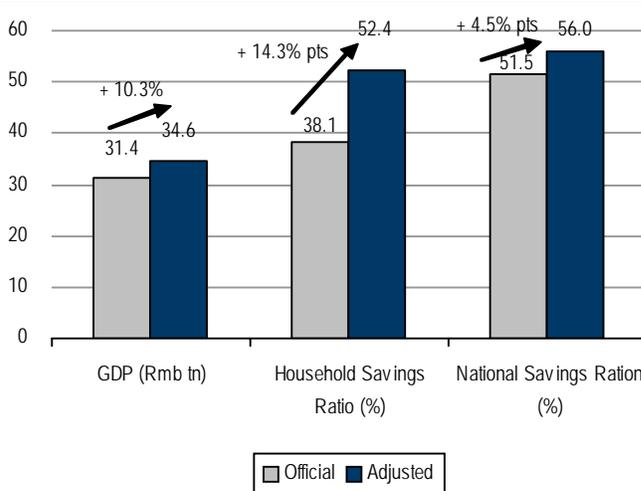
Source: Prof. Wang's Study

**Figure 4: Comparing income distribution – China and US**



Source: US Federal Reserve, NBS, Wang's Study

**Figure 6: GDP and savings ratio adjusted**



Source: Prof. Wang's Study, NBS, Credit Suisse estimates

# Introduction

Credit Suisse, along with China Society of Economic Reform, has sponsored Prof. Wang Xiaolu of the China Reform Foundation, in his second study on China's grey income and income distribution. For details on the first study, please refer to **Analyzing Chinese Grey Income**, published by Credit Suisse on 3 March 2008.

The recent survey, undertaken in late 2009 (using 2008 data), covers 19 provinces, 64 cities and 14 counties, with a total sample size of 4,909. After removing 714 samples with either sample quality problems or with negative income in 2008 (for example, due to a loss-making family business), the effective sample size is 4,195. This sample size is significantly larger than the first survey in 2005-06, in which urban residents in 27 provinces, including 49 cities and 14 counties, were surveyed. Some 2,147 questionnaires were returned with 2,054 accepted after verification.

The methodology of the current survey is similar to that of the first. The purpose is to try to correct the understatement of income in the official household survey by the National Bureau of Statistics (NBS). Basically, the study assumes that while respondents understate their income during the survey of NBS (for reasons like worrying that such information will be passed to tax authorities, etc.), they have no incentive to understate total spending, particularly the percentage of food consumption to total spending (the Engel's coefficient). Based on this assumption, the survey employs interviewers' questions about income, spending and food consumption from the 4,000 plus respondents whom they know personally. The assumption is that as the interviewer knows the respondent personally, the respondent will feel more comfortable and willing to disclose their "true" income. Then, based on the corresponding Engel's coefficient, the income data collected in this study is used as a reference, combined with some econometric adjustments, to adjust the data reported in the official household survey by NBS.

## 'Actual' income could be much higher

Compared to official data, per-capita incomes in Prof. Wang's Study for every household group are higher than official data. The average difference is a startling 90%! However, it is clear that the gap is much larger for the top 20% of income households, while the gap between Wang's study and official data is very limited for low-income households.

**Figure 7: Comparing Wang's study to the official data**

(2008) Household distribution	Per-capita disposable Income (Rmb p.a.)		(2)/(1) %
	Official data (1)	Wang's study (2)	
Bottom 10%	4,754	5,350	113
10-20%	7,363	7,430	101
20-40%	10,196	11,970	117
40-60%	13,984	17,900	128
60-80%	19,254	27,560	143
<b>80-90%</b>	<b>26,250</b>	<b>54,900</b>	<b>209</b>
<b>Top 10%</b>	<b>43,614</b>	<b>139,000</b>	<b>319</b>
<b>Total</b>	<b>16,885</b>	<b>32,154</b>	<b>190</b>

Source: NBS Prof. Wang's Study, Credit Suisse estimates

Compared to the first study in 2006 (using 2005 data), the 2009 study (on 2008 data) revealed some very interesting differences: 1) the gap between the average income of Wang's study versus official data has risen from 77.7% to 90.4%, i.e. the problem of hidden income in these three years is rising; 2) while the income gap between Wang's study and official data has been roughly the same for the top 10% of households, it has increased substantially for the other 80-90% of households, from 38.7% to 109.1%. This means that the second 10% of richest households is starting to "benefit" significantly from hidden income. If we assume (as Prof. Wang does) that Chinese grey incomes mainly come from illegal or quasi-illegal income, then this is worrying, as such income is now

Prof. Wang's second study on China's grey income and income distribution

Sample size of this survey was significantly higher at 4,195

The survey aims to reconcile the income that we think was understated by NBS

Household income revealed by Prof. Wang's study is on average 90% higher than the official data

Income gap is widening and the second top 10% of income households is also starting to benefit from hidden income

becoming more widespread among a wider group of the population; 3) most of the hidden income is concentrated in the top 20% of households. Together, they account for 81.3% of hidden income, within which the top 10% of households accounts for 62.5%.

**Figure 8: Comparing the 2005 and 2008 data from Wang's study**

Household distribution	Wang's study/Official data (%)		% of income
	2005	2008	
Bottom 10%	99.1	112.5	0.4
10-20%	101.8	100.9	0.0
20-40%	106.9	117.4	2.3
40-60%	114.0	128.0	5.1
60-80%	130.6	143.1	10.9
<b>80-90%</b>	<b>138.7</b>	<b>209.1</b>	<b>18.8</b>
<b>Top 10%</b>	<b>337.6</b>	<b>318.7</b>	<b>62.5</b>
<b>Total</b>	<b>177.7</b>	<b>190.4</b>	<b>100.0</b>

Source: Prof. Wang's Study, Credit Suisse estimates

If we assume that there is no underestimation of rural income, then Prof. Wang's study of 2005 and 2008 data reveals the following trends: 1) growth of total disposable incomes during this period is roughly equal to GDP, instead of lagging it as official data suggests; 2) the growth of hidden incomes, however, is much faster than normal income; therefore, as a percentage of GDP, hidden income increased from 26.5% to 29.5%, and this contributes to the widened income gap in China.

Over 80% of grey income comes from the top 20% of households

Household disposable income is roughly growing as fast as GDP

**Figure 9: Income changes between 2005 and 2008**

	2005	2008	Change (%)
Per-capita urban disposable income (Rmb, official data)	11,100	16,885	52.1
Per-capita urban disposable income (Rmb, Wang's study)	19,730	32,154	63.0
Urban population (mn)	562	607	7.9
Per-capita rural net income (Rmb)	3,537	5,171	46.2
Rural population (mn)	745	721	-3.2
Total disposable income (Rmb bn, official data)	8,876	13,974	57.4
<b>Total disposable income (Rmb bn, Wang's study)</b>	<b>13,727</b>	<b>23,237</b>	<b>69.3</b>
<b>Estimated hidden income (Rmb bn)</b>	<b>4,851</b>	<b>9,263</b>	<b>91.0</b>
GDP (Rmb bn)	18,322	31,405	71.4
Total disposable income (% of GDP, official data)	48.4	44.5	-4.0
<b>Total disposable income (% of GDP, Wang's study)*</b>	<b>74.9</b>	<b>74.0</b>	<b>-0.9</b>
<b>Estimated hidden Income (% of GDP)*</b>	<b>26.5</b>	<b>29.5</b>	<b>3.0</b>

Source: Prof. Wang's Study, NBS

In this new report, Prof. Wang distinguishes between the two concepts of "hidden income" and "grey income". "Hidden income" is defined as the difference between the total household disposable income estimated from his study (Rmb23.2 tn in 2008) and official household disposable income from the NBS household income survey (Rmb14.0 tn in 2008), which amounted to Rmb9.3 tn in 2008. "Grey income" is defined as the difference between Wang's estimated household disposable income (Rmb23.2 tn in 2008) and household disposable income (Rmb 17.9 tn in 2008) revealed in the flow of funds (FOF) accounts estimated from the Economic Census (data collected from enterprises), amounting to Rmb5.4 tn in 2008.

Grey income is growing at a much faster rate

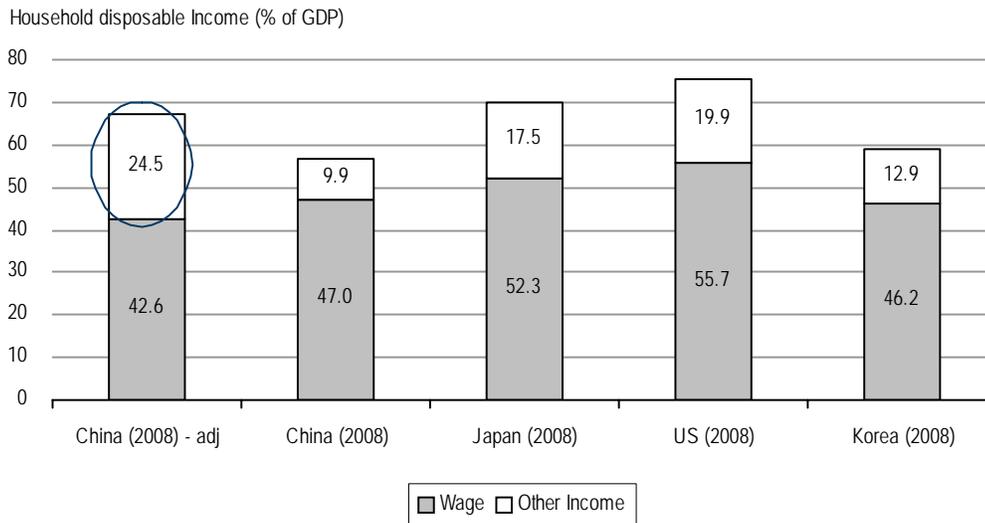
## Re-estimating the distribution to households

Based on these new results, Prof. Wang has re-estimated the wage and non-wage income for Chinese households, with the estimated grey income added to non-wage income while wage income remains unchanged. Also, it is assumed that 60% of grey income is not captured in the official national account statistics, so is added back to the national income and GDP data. Comparing the results of China with other countries, the impact of this grey income adjustment is very large and clear. Before the adjustment, the share of GDP

GDP distributed to Chinese households is much higher if grey income is included

distributed to households in China is very low compared to developed world economies such as the US and Japan, particularly for non-wage income. However, if the grey income is included, the picture changes drastically: 1) distribution to households in China is only slightly smaller than that of the US and Japan, and well above Korea's; and 2) non-wage income, instead of being very small as the official data suggests, was actually very large – even bigger than a capitalistic market economy, such as the US.

**Figure 10: Large share of non-wage income in China**



Portion of non-wage income/GDP in China (24.5%) is higher than that in the US (20%)

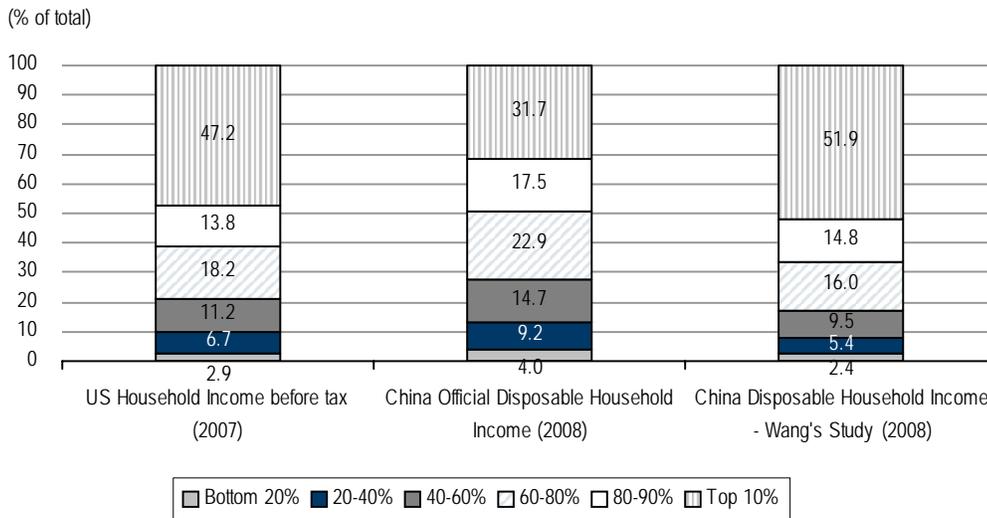
Source: Prof. Wang's Study, NBS, CEIC

We have compared the distribution of per-capita income between US and Chinese households (based separately on the official NBS household income survey data and estimates from Wang's study), assuming that the urban population is roughly equal to the rural population in China and there is no underestimation of rural personal incomes. Estimates from the official survey show Chinese household income to be much more evenly distributed than for the US, while income distribution based on Wang's study shows that the distribution pattern of Chinese cities is actually rather similar to that of the entire US society. This seems to fit better, with income distribution in China slightly more uneven than in the US and in fact seems more consistent with what we observed.

One very interesting observation to argue for the highly uneven income distribution in China is reflected in the strong buying power of its richest people. For example, according to our analysts, despite their strong position in the China market, China only accounts for 3% and 5% of sales for Volkswagen and Pepsi, respectively. In contrast, Greater China (mostly mainland China, as they are also major buyers of such items in Hong Kong) accounted for 10%, 20% and 28% of sales by LVMH, Richemont and Swatch Group respectively – all major luxury goods companies. See also our *China Consumer Survey – Consumption Jump*, published on 8 January 2010.

Strong buying power of the rich Chinese

**Figure 11: Comparing income distribution – China and the US**



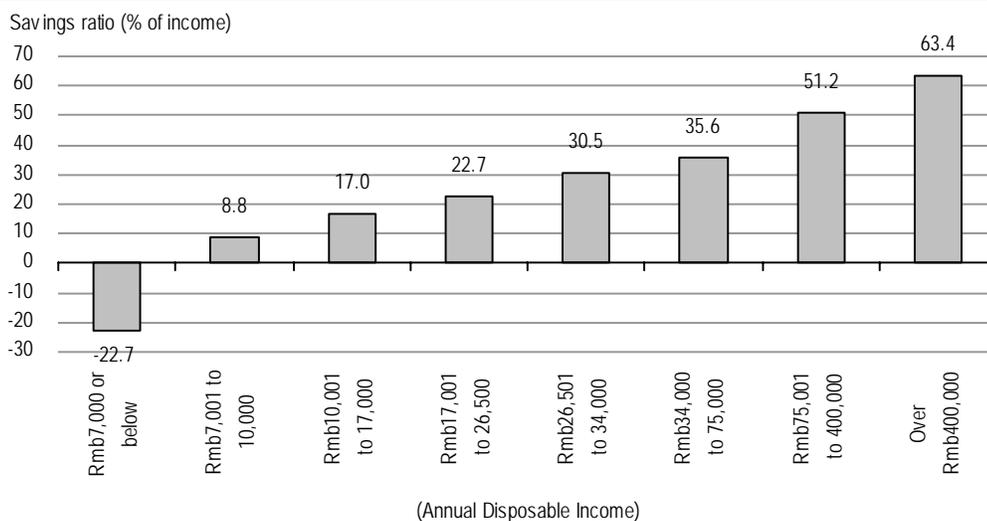
Source: US Federal Reserve, NBS, Wang's Study, Credit Suisse estimates

The implication of this analysis is that overall income distribution in China is comparable to other countries. But with a large portion derived from grey income, it is concentrated in a small group of people with a very high savings ratio. So, if income distribution becomes more equitable, it would help boost the consumer market. Based on the data in Prof. Wang's survey, for those respondents earning less than Rmb7,000 per capita in 2008, they spend more than their income (i.e. negative savings), while those earning Rmb7,001-10,000 had a savings ratio of only 8.8%. In contrast, the highest income group earning over Rmb400,000 had a savings ratio much higher at 63.4%.

Based on Wang's study, China's income distribution is not as evenly distributed as official data suggests

More equally distributed income would help to boost consumption

**Figure 12: Savings ratio diverges significantly between rich and poor**



Source: Prof. Wang's Study

## Impact on Chinese consumption

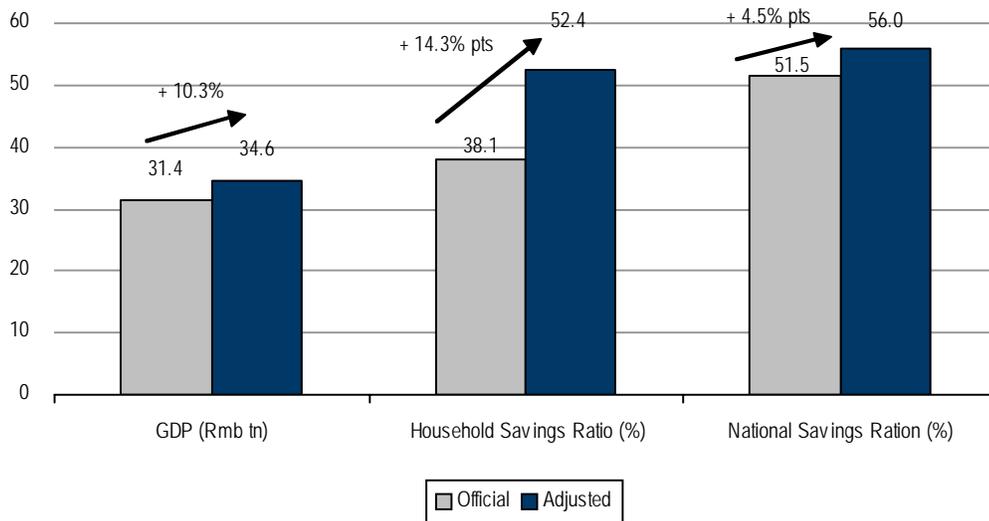
The existence of such large grey income also means that the size of the economy will be bigger, with the actual savings ratio higher. According to Prof. Wang's study, household disposable income in China should be about Rmb23.2 tn, almost Rmb10 tn higher than the level revealed in the NBS household survey. However, the gap is smaller (only Rmb5.3 tn) when we compare this to the estimated level of household disposable income,

The highest income group saves 63.4% of their income whereas the lowest income group spends more than they earn (a negative savings rate of -22.7%)

The actual GDP and savings ratio should be higher if we take account of the grey income

at Rmb17.9 tn, under the Flows of Funds Accounts in China's National Account Statistics. If we assume 60% of this gap is due to underestimation of actual GDP/national income, while 40% is wrongly classified under corporate and government income, then China's GDP in 2008 would be Rmb34.6 tn 10% above the official level. Household and national savings ratios would also increase by 14.3 p.p. and 4.5 p.p., respectively. A larger economy and higher savings ratio mean that the potential of China's consumer market (including demand for consumer-related commodities like oil and agricultural products) could be even bigger.

**Figure 13: GDP and savings ratio adjusted**



Source: Prof. Wang's Study, NBS, Credit Suisse estimates

Indeed, as we argued in *China Market Strategy – A Brave New World*, published on 14 June 2010, if we assume a 1 p.p. increase in the urbanisation ratio p.a. and wages increase 2 p.p. faster than GDP growth (a possible consequence of the government's efforts in income distribution reform), then based on the NBS household survey data, household consumption as a percentage of GDP increases 6.3 p.p. between 2009 and 2015. While most investors and the Chinese government expect Chinese consumption to become a more important driver of economic growth, we do not think anyone has built in such expectations in their growth model for China. This, therefore, could be a real surprise to the market.

Based on our assumptions, the consumption to GDP ratio would increase 6.3% between 2009 and 2015

**Figure 14: Key assumptions of the consumption model**

	2000-09	2010E	2011-15E
Urbanisation ratio (p.p. change p.a.)	1.2	1.0	1.0
Nominal GDP growth (% change p.a.)	14.6	15.0	11.0
Urban wage (% change p.a.)	12.0	17.0	13.0
Urban non-wage income (% change p.a.)	15.3	15.0	11.0
Rural income (% change p.a.)	9.7	15.0	11.0
	<b>2000</b>	<b>2009</b>	<b>2015E</b>
Urban consumption as % of income (avg.)	79.4	65.0	68.0
Rural consumption as % of income (avg.)	74.1	77.5	77.5

Source: CEIC, Credit Suisse estimates

**Figure 15: Consumption boost**

	1995	2000	2005	2009	2010E	2015E
Total population (mn)	1,211	1,267	1,308	1,335	1,341	1,375
% change		4.6	3.2	2.1	0.5	2.5
Urban population (mn)	352	459	562	622	638	723
% of total	29.0	36.2	43.0	46.6	47.6	52.6
GDP (Rmb bn)	6,079	9,921	18,494	33,535	38,566	64,985
% change		63.2	86.4	81.3	15.0	68.5
Urban wage per capita (Rmb)	3,390	4,481	7,798	12,382	14,487	26,691
% change		32.2	74.0	58.8	17.0	84.2
<b>Total payroll – urban (Rmb bn)</b>	<b>1,192</b>	<b>2,057</b>	<b>4,383</b>	<b>7,700</b>	<b>9,248</b>	<b>19,305</b>
% change		72.5	113.1	75.7	20.1	108.7
<b>% of GDP</b>	<b>19.6</b>	<b>20.7</b>	<b>23.7</b>	<b>23.0</b>	<b>24.0</b>	<b>29.7</b>
Urban non-wage income (Rmb bn)	313	833	1,980	4,027	4,754	9,076
% change		166.6	137.6	103.3	18.1	90.9
<b>Urban household income (Rmb bn)</b>	<b>1,505</b>	<b>2,890</b>	<b>6,364</b>	<b>11,727</b>	<b>14,003</b>	<b>28,382</b>
% change		92.0	120.2	84.3	19.4	102.7
<b>% of GDP</b>	<b>24.8</b>	<b>29.1</b>	<b>34.4</b>	<b>35.0</b>	<b>36.3</b>	<b>43.7</b>
Urban consumption per capita (Rmb)	3,538	4,998	7,943	12,265	14,375	26,698
% of income	82.7	79.4	70.2	65.0	65.5	68.0
<b>Urban consumption (Rmb bn)</b>	<b>1,244</b>	<b>2,019</b>	<b>4,465</b>	<b>7,627</b>	<b>9,177</b>	<b>19,310</b>
% change		62.3	121.1	70.8	20.3	110.4
<b>% of GDP</b>	<b>20.5</b>	<b>20.4</b>	<b>24.1</b>	<b>22.7</b>	<b>23.8</b>	<b>29.7</b>
Rural net income per capita (Rmb)	1,578	2,253	3,255	5,153	5,926	9,986
% change		42.8	44.4	58.3	15.0	68.5
Rural consumption per capita (Rmb)	1,310	1,577	2,555	3,994	4,593	7,739
% of income	83.1	70.0	78.5	77.5	77.5	77.5
<b>Rural consumption (Rmb bn)</b>	<b>1,126</b>	<b>1,350</b>	<b>1,905</b>	<b>2,847</b>	<b>3,229</b>	<b>5,046</b>
% change		19.9	41.1	49.5	13.4	56.3
<b>% of GDP</b>	<b>18.5</b>	<b>13.6</b>	<b>10.3</b>	<b>8.5</b>	<b>8.4</b>	<b>7.8</b>
<b>Total consumption (Rmb bn)</b>	<b>2,371</b>	<b>3,369</b>	<b>6,370</b>	<b>10,474</b>	<b>12,406</b>	<b>24,356</b>
% change		42.1	89.0	64.4	18.4	96.3
<b>% of GDP</b>	<b>39.0</b>	<b>34.0</b>	<b>34.4</b>	<b>31.2</b>	<b>32.2</b>	<b>37.5</b>

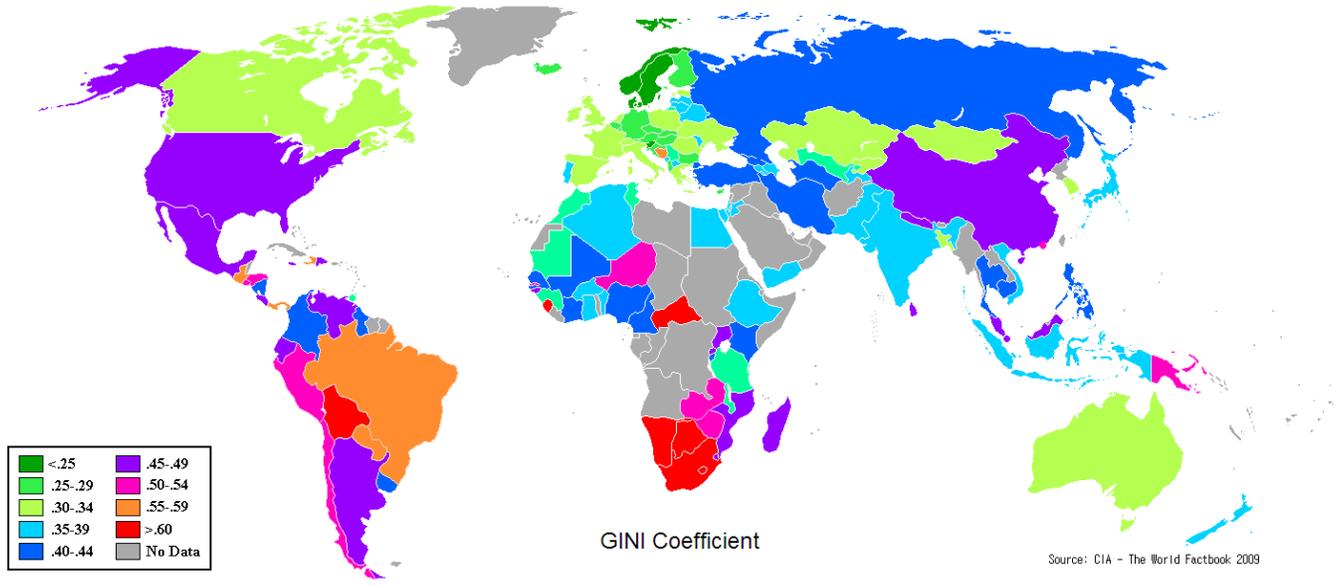
Source: CEIC, Credit Suisse estimates

## Income inequality could cause social issues

Another issue concerning the large amount of grey income is the social stability issue. According to various estimates, including that of the United Nations, the Gini coefficient (a measurement of income inequality) of China, based on the official data, is already between 0.45-0.5, roughly equal to the US but higher than other developed countries such as Japan and in Europe. If the effect of grey income is included, China's Gini coefficient would be even higher, similar to that of South American countries, but hopefully still better than the African continent.

Grey income worsens the inequality that could cause social instability

Figure 16: Gini coefficient based on official data



Source: Wikipedia

Against this background, from a few years ago, it is clear that the Chinese government has started to adopt policies trying to address social inequality, such as enacting the Labour Contract Law in 2008. Also, the government as well as the Chinese media are also taking a rather open (to a certain extent, supportive) attitude towards the labour unrest in Guangdong during the industrial disputes earlier this year, which has driven industrial wages to rise across China. Such attitudes to allow labour costs to rise in China have not been seen during the earlier years of Chinese economic reform. Also, it is widely reported in the Chinese media that the Chinese government will announce a new reform initiative this year called 'Income Distribution Reform', probably around the time of the announcement of the 12<sup>th</sup> Five-Year Plan (for 2011-15). The purpose of this reform is to try to address unequal income distribution in China, and there are some news reports (such as on Sina.com) saying that the government is targeting to double the wages of manufacturing workers in next five years.

The government is already taking action to address this social inequality

Few details suggest how the government is planning to achieve this target, but we expect the following action to be taken:

Wages to have to be raised

- (1) The government will take the initiative to raise wages in state-owned enterprises (SOEs), which, in turn, should drive wage growth in the non-state sector;
- (2) Individual provincial/city governments will continue raising minimum wages across China; and
- (3) The role of collective bargaining will rise. The government is likely to strengthen the function of the All-China Federation of Trade Unions (ACFTU). Instead of taking a rather passive position as in the past few decades, this government-sponsored trade union body (headed by the Vice Chairman of the National People's Congress (NPC) who is also a member of the Politburo in the Chinese Communist Party) is likely to take a more detailed role in promoting workers' rights and wage negotiations.

This reform deserves a lot of attention from investors, in our opinion. On the one hand, if it is successful in boosting the wages of workers, this would help develop the Chinese consumer market, as well as reduce the risk of social instability due to social inequality. However, based on economics history, active government involvement in wage negotiations usually results in reducing the flexibility of the labour market, which may not be positive when China faces its next major economic downturn similar to in the late

Higher wages benefit the consumer market, but are bad for employers

1990s. One way or another, this reform could affect the investment environment of China stocks significantly.

## **Sector and stock beneficiaries**

In this report, we also highlight a number of sectors/stocks which we think are major beneficiaries of this widespread grey income phenomenon in China. They include China property, European luxury goods, Macau gaming and some Hong Kong property investors with large exposure to the high-end retail space in Hong Kong. Stocks included in this report are: BMW, COLI, Galaxy, Hang Lung Properties, KWG, LVMH, Mengniu, Richemont, Swatch and China Vanke.

# **The translated version of Professor Wang Xiaolu's report on China's grey income and income distribution (2nd survey study)**

# Analysing Chinese grey income

Between 2005 and 2006, the National Economic Research Institute of the China Reform Foundation conducted an income and consumption survey of urban residents in different cities of China. In 2007, the deputy director of the institute, Professor Wang Xiaolu, published a study report entitled *Grey Income & Income Inequality in China*, based on the survey. Professor Wang thinks that the disguised incomes, totalling Rmb4.8 tn of the disposable income of urban residents in 2005, which were not reflected in the statistics of residential income (“hidden income”), mainly belong to the high income class. A correction of the income data by including the hidden income shows that the gap between the top 10% of household incomes and the bottom 10% in urban areas widens to 31 times rather than the originally calculated 9x, while the gap between the top 10% of household incomes and the bottom 10% household incomes on a nationwide basis, reaches 55 times instead of the original 21. These figures mean that the income inequality problem is more severe than what we knew before.

The report also makes estimations of residential incomes – mainly those of higher income residents – from different perspectives according to data concerning family ownership of cars, sales of commercial housing, numbers of overseas travels per person and bank savings. The results of the above estimations were cross validated to prove their accuracy. Meanwhile, through a primary analysis of the sources of grey income, the author argues that the phenomenon is caused by a loophole in the system and therefore demands an urgent system reform to solve the imbalance.

To what degree are the methods and results of the above estimations credible? What sort of changes has occurred to national income distribution in all these years? To answer these questions, we conducted another survey of urban residents’ incomes and expenses in 2009 (data from the full year of 2008), and made a new study and analysis based on it. The following report states the scope of this survey, the methodology and analysis, and final results, as well as further analysing the income equality issue and its relevant countermeasures.

Part One of the report informs us about the methodology of the survey and the distribution of the survey samples. Part Two states the methodology of analysis and the result of the analysis. Part Three estimates the genuine standard of the disposable incomes of urban residents and the actual income gap. Part Four is a further analysis of the sources of grey income. Part Five analyses the influence of grey income upon the structure of national income distribution. Part Six is the conclusion of the report.

Other than analysing Chinese grey income, the report also estimate residential incomes from different perspective

The second report was published in 2009 and has new study analysis

There are six parts to the report

# 1) Sampling methodology and sample distribution

## How to obtain genuine data

We contend that the present statistics on residential incomes have major distortions, especially in the part concerning the disposable income of high-income residents in urban areas. These distortions do not lie within the methodology of the survey or calculation. Currently, samples of urban and rural residents are determined by random sampling. There is nothing wrong with this method in itself, but attention should be paid to the following:

Random sampling was used to determine resident samples

- 1) Current random sampling is based on the principle of voluntary participation. A considerable proportion of higher income residents, however, is unwilling to do the survey. The samples, therefore, have to be replaced by someone else's, and those of higher income residents are left out.
- 2) Among those higher income residents in the sampling, many were reluctant to provide genuine income information. They tend to report truthfully their salaries, but are relatively untruthful about other income, especially those considerable hidden "grey incomes" from unidentifiable sources. This part of income is definitely impossible to reflect in the survey data.

For these reasons, deviations of data tend to occur and the survey fails to reflect the genuine income distribution of residents. With current samples and methodology, there can be no easy solution to this. A new way of studying is required. For this reason, the first and foremost purpose of our study is to obtain genuine data about residential income. In the 2005-06 survey, we drew on the methods of sociology and asked our professional staff to investigate the family incomes and expenses of their relatives, friends, colleagues and neighbours. We also took certain supplementary measures to ensure the authenticity of the data. It proves that this method worked and we did have data of relatively higher accountability.

Deviations exist but there is no easy solution

In the 2009 survey, we adopted the same method, but implemented stricter quality control measures and increased the quantity of samples. It is worthwhile to know that our method is different from that of random sampling and therefore the data cannot be used directly to calculate the general distribution of urban residential income. A detailed introduction of our calculation methods is given in Part Two of this report. In this part, we focus on the explanation of our survey methodology and distribution of samples.

Before the survey, we organised for our staff at various locations training on questionnaire and survey methodology. To eliminate the interviewees' doubts, the questionnaires were anonymous and the interviewees were assured of the research purpose of the survey as well as confidentiality of their personal data. We also took measures to lower the sensitivity of the survey to ensure data authenticity. For instance, we emphasised that our purpose is to study consumption structure instead of income levels. The questionnaire is designed to inquire about consumption issues before the income issues, and to inquire about different divisions before the income and consumption total. As for the sources of incomes, the questionnaire only asked the interviewees to choose among simple divisions of income, such as salary, part-time and service revenue, entity-business, financial investment, property, intellectual property, transferred income and other incomes. After the survey, the staff were required to report about their relationship with the interviewee and their personal estimation about the accountability of the survey result (including possible deviations and degree of deviation) as references for the questionnaires.

Questionnaire and interviewee training

After the completion of the survey, we made a thorough quality inspection of the questionnaires. Apart from verification of information integration and survey locations, we also designed a set of inspection procedures to examine the rationality of the logic for

Quality inspection post survey completion

each question and check whether the relationship of income and expenditure data in the sample is reasonable or not. We then exclude those disqualified questionnaires (including those with much information left out, altered, containing abnormal or illogical information and were impossible for us to identify whether correct, and those from non-urban residents) and questionnaires whose information authenticity was doubtful.

## The distribution of survey samples

This survey was conducted in 64 cities of different scale in 19 provinces (including cities under direct management of the central government), as well as 14 counties and organic towns.

The provinces (including cities under direct management of the central government) are Beijing, Shanghai, Shandong, Jiangsu, Zhejiang, Guangdong, Shanxi, Henan, Hubei, Anhui, Jiangxi, Liaoning, Heilongjiang, Sichuan, Chongqing, Yunnan, Shanxi, Gansu and Qinghai. The cities are Beijing, Shanghai, Jinan, Nanjing, Hangzhou, Guangzhou, Taiyuan, Zhengzhou, Wuhan, Hefei, Nanchang, Shenyang, Harbin, Chengdu, Chongqing, Kunming, Xi'an, Lanzhou, Xining, Shenzhen, Qingdao, Suzhou, Datong, Anshan, Wushun, Tsitsihar, Daqing, Xuzhou, Yangzhou, Fuyang(in Anhui Province), Wuhu, Lu'an, Rizhao, Xiangfan, Yichang, Dongwan, Zhongshan, Mianyang, Xinzhou, Kaifeng, Sanmenxia, Zhumadian, Xiaogan, Yidu, Pizhou, Fuyang(in Zhejiang Province), Jinhua, Shaoxing, Shaoguan, Chaohu, Chuzhou, Ganzhou, Ji'an, Jindezhen, Jiujiang, Dandong, Tieling, Mudanjiang, Xichang, Xianyang, Baiyin, Jiayuguan, Tianshui and Yuxi. Among these, 21 are cities under direct management of the central government, provincial capitals or sub-provincial cities, 43 are small prefecture cities and county-level cities. In this way, a relatively balanced distribution was kept among cities of different scales.

The survey is conducted in 64 cities from 19 provinces

Counties and organic towns include Fanzhi County in Shanxi Province, Pei County in Jiangsu Province, Xiangshan County in Zhejiang Province, Pingyuan County and Qihe County in Shandong Province, Hua County in Henan Province, Dawu County in Hubei Province, Zhijiang County, Kai County and Zhong County in Chongqing City, Liquan County in Xianyang City of Shanxi Province, Gaolan County and Jingchuan County in Gansu Province and Minhe County in Qinghai Province. The geographical distribution of these counties was also relatively balanced.

14 counties and organic towns

This survey has chosen a large amount of cities with a relatively scattered distribution of samples, mainly for two reasons. First, if we choose too many samples in a city, we cannot ensure that our staff are all familiar with the respondents – which is a prerequisite of the survey. Second, as the samples are from relatively many cities, they can be more representative of the national economic situation.

Our methodology has its own shortcomings. A major problem of the survey is that the survey is non-recurring, and all the data about the income and consumption of the interviewed families are provided by the interviewee according to their memory (though we have excluded those family members who are unfamiliar with their family incomes and consumption). Compared with surveys requiring respondents to record their income and expenditure, this might cause greater data error. However, requiring respondents to record their information over an extended period of time is more costly, time-consuming and difficult, and more prone to systematic distortion due to sensitivity of the survey questions. Data errors in the non-recurring survey, due to inaccurate memory, are mostly random instead of systematic. In the sense that the result is calculated by taking the average, random errors should offset each other and decrease, while systematic distortions cannot be offset. In view of our research purpose and conditions, we must therefore adopt non-recurring means for the survey.

The shortcomings of our methodology

This survey included 4,909 sample families. After a strict quality inspection, 689 disqualified questionnaires were deleted, 25 negative income samples were excluded from the analysis (as the analysis showed that most of these families were not low in income

The effective sample size is 4,195.

most of the time. Negative income families were mainly suffering from a temporary operational deficit). The effective sample size therefore is 4,195.

Figure 17 gives us information about the regional distribution of all samples and effective samples, the scales of the cities, the age and household registration of the respondents, the education level of the maximum income earners of the sample families, the distribution of per-capita disposable incomes of the interviewed family and others. The samples are generally evenly distributed in different regions and cities of different scales, and among interviewees of various ages and education levels. However, it seems that the survey sample is skewed to people living in larger cities, with better education, owning their business or working in white collar positions. This is done for a reason. According to the results of the 2007 report, the statistical distortion of urban residential incomes mainly occurs with higher income residents. In order to ensure enough samples of higher income residents for analysis, we intentionally increased the number of samples for this group of people. In this way, we could make sure that the difference of distribution has the least impact on the estimation of per-capita income distribution of national urban residents.

The samples are generally evenly distributed but we have intentionally increased samples of higher income group in urban areas

Figure 17: Sample distribution by different groups

	Total Samples	Sample distribution (%)	Effective Sample Distribution	Proportion (%)
<b>1. Geological location</b>				
Eastern region	1,863	37.95	1563	37.26
Middle and Northeast	1,848	37.65	1605	38.26
Western region	1,198	24.40	1027	24.48
<b>Total</b>	<b>4,909</b>	<b>100.00</b>	<b>4195</b>	<b>100.00</b>
<b>2. Scale of the cities</b>				
Cities with more than 2 mn in population	2,495	50.83	2,083	49.65
Cities with 1 to 2 mn in population	915	18.64	789	18.81
Cities with less than 1 mn in population	995	20.27	889	21.19
Counties and organic towns	504	10.27	434	10.35
<b>Total</b>	<b>4,909</b>	<b>100.00</b>	<b>4,195</b>	<b>100.00</b>
<b>3. Age of the interviewees</b>				
20-29	1,647	33.55	1,411	33.64
30-39	1,383	28.17	1,196	28.51
40-49	1,236	25.18	1,062	25.32
50-59	520	10.59	425	10.13
60 and above	123	2.51	101	2.41
<b>Total</b>	<b>4,909</b>	<b>100.00</b>	<b>4,195</b>	<b>100.00</b>
<b>4. Registration of the interviewees</b>				
Local urban citizens	4,457	90.79	3,808	90.77
Non-local urban citizens	276	5.62	234	5.58
Non-local rural citizens	156	3.18	138	3.29
Forget to answer	20	0.41	15	0.36
<b>Total</b>	<b>4,909</b>	<b>100.00</b>	<b>4,195</b>	<b>100.00</b>
<b>5. Highest educational level in the family</b>				
Elementary school and below	165	3.36	136	3.24
Junior middle school	970	19.76	832	19.83
Senior middle school(including equivalency)	1,833	37.34	1,565	37.31
Junior college and undergraduate	1,822	37.12	1,569	37.40
Post-graduate and PhD	82	1.67	74	1.76
Forget to answer or indefinable	37	0.75	19	0.45
<b>Total</b>	<b>4,909</b>	<b>100.00</b>	<b>4,195</b>	<b>100.00</b>
<b>6. Highest income profession of the family</b>				
General technician	396	8.07	353	8.41
Intermediate and advanced technicians	262	5.34	227	5.41
Other professionals(science, education, culture and health)	339	6.91	302	7.20
Cadre of the Party, government offices, army and institutions	193	3.93	165	3.93
Advanced cadre of the Party, government offices, army and institutions	52	1.06	47	1.12
Staff of enterprises, govt. organizations and communities	561	11.43	483	11.51
Middle-level manager of enterprises and govt. organisations	327	6.66	268	6.39
Service industry	317	6.46	277	6.60
Worker	659	13.42	562	13.40
Personal business, freelancer	1,008	20.53	853	20.33
Owner, partner, shareholder of private enterprises	317	6.46	277	6.60
Other professions	73	1.49	66	1.57
Students, post-graduates	20	0.41	17	0.41
The jobless (including the retired and the resigned)	349	7.11	278	6.63
Forget to answer or indefinable	36	0.73	20	0.48
<b>Total</b>	<b>4,909</b>	<b>100.00</b>	<b>4,195</b>	<b>100.00</b>

Note: the scale of the city is measured by its permanent urban population. Source: Survey Sample Data.

## 2) Analysis methodology and results

### Engel's coefficient

First, we conducted the survey of urban residential incomes not for the direct estimation of general income distribution of urban residents, but for the estimation of the relationship between income level and the consumption pattern, based on genuine data with which there is no underestimation of income. Such information is then used later to "adjust" the income data of the official household survey of the NBS. One of the key variable is the Engel's coefficient, which refers to the proportion of food expenses in consumption outlay. Engel's coefficient is an index closely connected with income level. It has been recognised in the economic profession that the decline of Engel's coefficient usually correlates with the rise of income levels. After their basic needs for food and clothing are satisfied, residents gradually turn to other needs, such as the need for transportation and communication, luxuries, as well as higher level demand for education and cultural entertainment. With higher income levels, their incremental food expenditure declines, resulting in a lower level of food consumption to total consumption expenditure.

Based on this principle, we can choose a relatively trustful and typical survey sample to calculate the Engel's coefficient and per-capita disposable income of the family, and use statistical theory or econometrics studies to find their statistical relationship. With this above correlation, we can examine any set of residential income statistics. In other words, we need only a set of relatively credible Engel's coefficient to estimate the genuine income level per capita. Therefore, based on the Engel's coefficients of group urban residents by NBS, we can estimate the average income levels of these groups and compare the result with the published income statistics. We can notice whether or not a systematic distortion exists and how large the distortion can be. We call this kind of method "Engel's Ratio Method".

Of course, the prerequisite of this method is to ensure the authenticity of the Engel's coefficients in group census samples. If we are likely to encounter such a problem, i.e. if the income level statistics of some groups have systematic deviations, would the relevant Engel's coefficients have the same systematic deviation? Actually, while there might be some deviation in income data (underestimated, for instance), the consumption expenses are very likely to involve certain deviations too. As long as both deviations are of the same direction and maintain relatively the same proportion in the statistical sense, then the average group of Engel's coefficients is still basically credible. We can continue to use this Engel's coefficient to estimate genuine income levels. Second, even if consumption expenses and food expenses have different proportions of deviations, deviations of the same direction can be offset to a large extent in calculating the Engel's coefficient to minimise the error in the final result. Therefore, it can still be used to estimate income levels.

According to the 2007 study, the official income data of the highest income residents had the greatest distortion and were far lower than their "real" incomes. There were certain underestimates about their consumption and food expenses, but not as obvious as the under-reporting of their incomes. Food expenses, in general, involve less deviation than the total consumption. This means that the calculated Engel's coefficient might be slightly higher and the estimated income level might be slightly lower, yet a large part of the data deviation can be offset. We have to note, however, that the final result of the income level might still be a little bit lower than the "real" incomes, to some extent.

Another fact that we need to be aware of is that the Engel's ratio method used to examine the statistical data of residents' incomes can only make corrections upon systematic errors of the existing samples, without ascertaining the actual quantity of omitted higher income residents. Therefore, the final result might still underestimate the income levels of higher income residents to some extent (due to sample omission).

Engel's coefficient (proportion of food expenses in consumption outlay) is an index closely connected with the income level

Engel's coefficient can be used to estimate per capita income

Deviations in calculating Engel's coefficient are generally acceptable

In the following part, the author has used two concrete methods to set up the correlation between Engel's coefficient and the income level, in an effort to examine residents' income data. Both methods belong to the Engel's ratio method, but are slightly different in terms of analysis and procedures. For the sake of convenience and distinction, the author abbreviates "per-capita disposable income" into "per-capita income", survey samples of urban resident households by NBS into "official sample", samples of our survey into "study samples", per-capita income from official data into "official income", and per-capita income estimated by comparing the parameter of survey samples and official data into "estimated income".

## Group comparison

First, we calculate the per-capita income and Engel's coefficients of all survey samples respectively.

Second, we calculate the group Engel's coefficient of the official data. The group income data, issued by the NBS annually, divide the urban resident families into seven groups according to their per-capita incomes. Among these, the minimum income, low income, maximum income and high income are further divided into ten equal quantities, with each group taking 10% of the urban families. The three groups in the middle, namely the lower middle income, middle income, and upper middle income groups, are further divided into five equal quantities, with each group comprising 20% of the urban families. The average Engel's coefficient of the seven groups can then be calculated. Based on the explanation in the former chapter, we assume that the Engel's coefficient of the official sample is correct.

Third, we sort all the effective survey samples according to per-capita income, from the lowest to the highest. By group comparison method, we mean that samples of lowest income need to be added until their average Engel's coefficient equals that of the "minimum income of the official sample". This chosen group sample is called "minimum income group of the survey sample". This process of grouping does not require consideration of sample quantities. Then, the same method is used to group the "low income group of the survey sample", to make its average Engel's coefficient equal with the "low income of the official sample" (the above-mentioned second 10% of urban residents). This applies for each grouping.

Fourth, we calculate the average per-capita income of each group of the survey samples respectively. For reasons explained in the previous chapter, we assume that the Engel's coefficient of each group has an exclusive correspondence with their income level. In other words, we can calculate the per-capita income given the Engel's coefficient of each group correspondingly.

Finally, we compare the per-capita income of the survey samples with that of the corresponding official sample and discover the underestimation of income in the official sample. Figure 18 shows the group distribution of the survey samples and official samples. We can see from the form that group distribution of survey samples differ from each other though the same Engel's coefficient is taken. We can also discover that some survey samples with the highest per-capita income are left out of the seven groups because their Engel's coefficients are even lower. These people have an annual disposable income of more than Rmb400,000, with the highest one reaching Rmb1.76 mn. Figure 19 shows the comparison results of Engel's coefficients and per-capita incomes between survey samples and official samples.

**Figure 18: Comparison between group distribution of survey and census samples**

Group	Range (Rmb)	Survey samples effective samples	Proportion (%)	Official samples proportion (%)
Minimum income	1-7,000	365	8.7	10
Low income	7,001-10,000	622	14.8	10
Lower middle income	10,001-17,000	927	22.1	20
Middle income	17,001-26,500	650	15.5	20
Upper middle income	26,501-34,000	355	8.5	20
High income	34,001-75,000	635	15.1	10
Maximum income	75,001-400,000	565	13.5	10
Omitted samples	>400,000	76	1.8	0
<b>Total</b>		<b>4,195</b>	<b>100.0</b>	<b>100</b>

Note: Altogether 65,000 urban households are included in the census samples

Source: Professor Wang's study

**Figure 19: Comparison between survey samples and census samples**

Group	Estimated income		Official income		Comparison between two samples	
	Engel's coefficient	Per-capita income (Rmb)	Engel's coefficient	Per-capita income (Rmb)	Gap (Rmb)	Divergence (%)
Minimum income	0.4816	5,685	0.4814	4,754	931	19.6
Low income	0.4595	8,646	0.4594	7,363	1,283	17.4
Lower middle income	0.4297	13,392	0.4289	10,196	3,196	31.3
Middle income	0.4065	20,941	0.4042	13,984	6,957	49.7
Upper middle income	0.3790	29,910	0.3787	19,254	10,656	55.3
High Income	0.3437	47,772	0.3403	26,250	21,500	82.0
Maximum income	0.2908	164,034	0.2918	43,614	120,420	276.1
Omitted samples	0.2241	658,811				

Note 1: The tiny deviation between Engel's coefficients of survey and census samples has no influence upon the analysis and therefore is assumed as equal.

Note 2: "Income balance" refers to the part of survey income that exceeds the census income. "Balance percentage" refers to the proportion of income balance as compared with the census income.

Source: Professor Wang's study

From Figure 19, we discover that given an equal Engel's coefficient, the per-capita income of each group of survey samples proves higher than that of the official samples, while the gap expands for the higher income groups. The gap of the maximum income group is the greatest, with Rmb43,000 per-capita income in the official samples but Rmb164,000 per-capita income in the survey samples, nearly 3.8x. The gap of this group accounted for about two thirds of the total gap between estimated income and official income data. This generally coincides with the situations in the 2007 study report, only with the gap for the middle and lower income groups being slightly higher the 2007 study. This proves the accountability of the 2007 report essentially. However, we try to prove the accountability of this method in a later chapter through another method of estimation.

The income gap of the top income group is the greatest

In addition, it needs to be noted that after the publication of the 2007 report, a few readers mistook it for the estimation based on survey samples and questioned the accountability of the result. They held that both the means of survey (non-random sampling) and the sample quantity (relatively small) were not good enough for the direct estimation of general income distribution of urban residents. These misunderstandings arose from overlooking Engel's coefficient method, especially the group comparison analysis. In fact, even if you find it difficult to tell the substantial differences between our group analysis and the direct estimation, you will notice them by comparing the results. In Figure 20, the author compares the results of the two based on data from this survey. Obviously, the Engel's coefficients vary, and the per-capita incomes showed a marked difference. Take the per-capita income of the maximum income group, for example. The result of the group analysis was 164,000 renminbi, while direct estimation achieved Rmb294,000. The two methods are obviously different.

**Figure 20: Comparison based on the 2008 survey samples: group analysis and direct estimation**

Group	Group analysis			Direct estimation		
	Coefficient	Per-capita income (Rmb)	Proportion of sample distribution (%)	Engel's Coefficient	Per-capita income (Rmb)	Proportion of sample distribution (%)
Minimum income	0.4816	5,685	8.7	0.4794	5,884	10
Low income	0.4595	8,646	14.8	0.4654	8,362	10
Lower middle income	0.4297	13,392	22.1	0.4323	12,038	20
Middle income	0.4065	20,941	15.5	0.4146	19,285	20
Upper middle income	0.3790	29,910	8.5	0.3656	35,606	20
High income	0.3437	47,772	15.1	0.3187	76,097	10
Maximum income	0.2908	164,034	13.5	0.2645	293,769	10
<b>Average total</b>		<b>35,462</b>	<b>98.2</b>		<b>51,771</b>	<b>100</b>

Source: Prof. Wang's study

## Model analysis

The group comparison method has its own weaknesses, i.e. it assumes an exclusive correlation between the Engel's coefficient and income level. In fact, the Engel's coefficient can be influenced by other factors, including prices of consumption goods, differences in people's dietary habits, etc. Therefore, it could be doubted whether the Engel's coefficient is really only exclusively correlated with a definite income level.

As a result, the author adopts the second method of concrete estimation called model analysis. This method is based on econometric model analysis and can include other variants that influence the Engel's coefficient in the model as controlled variables for inspection besides income level and therefore excludes these influential factors in calculating the correlations between Engel's coefficient and income level. This makes up for the defect of group analysis and shows obvious advantages. The basic procedures can be described as follows:

The first step is to define the control variables. We need to re-examine the Engel's coefficient and per-capita income of the survey samples by using econometric analysis, and find out the relationship between income level and Engel's coefficient. We must also find out other factors that might affect the Engel's coefficient and include them in the model as controlled variables to estimate their influences.

Factors affecting the Engel's coefficient

First, price levels of consumption goods vary greatly from city to city. This might influence the Engel's coefficient. For instance, food prices tend to be remarkably higher in big cities than in small-sized cities, as big cities are far from agricultural production areas and require higher transportation costs etc. Generally speaking, the price difference between big cities and other medium- and small-sized cities is most evident in food than in other products, as it is difficult to transport and store vegetables and meat. As a result, the Engel's coefficient in big cities is likely to be higher under the same conditions. For lack of a definite consumption price, we have set in our model a variant "city" to present city scale, and assign respectively "1" to counties, "2" to cities with less than 1 mn population (here referred to as medium and small cities), "3" to cities with 1-2 mn population (referred to as big cities) and "4" cities with more than 2 mn population (referred to as mega cities).

Price of consumer goods

Second, residents in different places have their own dietary habits. People in some regions have a preference for delicacies, and hence may spend more on food. An analysis of the survey samples shows, under the same circumstances, that the Engel's coefficients in Shanghai, Jiangxi and Sichuan are noticeably higher than the average level of all provinces. We mark these three provinces with the virtual variant H1. The Engel's coefficients in Beijing, Shandong, Hubei, Guangdong, Chongqing and Henan are relatively higher than the average, and we mark them with virtual variant H2. The Engel's coefficients in Liaoning and Shanxi are lower than the average, and we mark them with L1. Thus, we include the above variants

Dietary habits

in our model. Samples from other provinces (including Jiangsu, Zhejiang, Anhui, Heilongjiang, Yunnan, Shanxi, Gansu and Qinghai) are regarded as the original pattern.

Third, the number of family members might have an influence upon the family, as bigger families tend to buy food in bulk and can save on food expenses. We then set a variant “family” to represent the number of family members.

Number of family members

Fourth, educational level might have an influence on the Engel’s coefficient, as residents of higher educational background may demand more on communication, education and cultural entertainment, while residents of lower educational backgrounds may spend more on food, cigarettes and drinks. We then set a variant “edu18” to represent the average educational level of adult family members, representing the average year of schooling for family members above the age of 18.

Educational level

Fifth, the Engel’s coefficient may be affected by family members’ employment status (the proportion of employed family members in the whole family). This is relatively complicated to explain. On the one hand, families with more employed members may save on food expenses because the employed members might eat in their workplaces and enjoy certain kinds of food allowances. On the other hand, however, they may prefer eating out instead of spending time preparing their own dinners, and therefore demand more food expenses. We still need to undertake further examination to see which factor prevails. We set the variant “emp” to present the employment situation in families.

Employment status

The second step involves setting function forms for the model. We can judge from the data directly that the correlation between the Engel’s coefficient and per-capita income is non-linear. Therefore, we chose semi-logarithmic function, semi logarithmic quadratic function, quadratic function and cubic function models, respectively, for estimation. Each holds Engel’s coefficient as the interpreted variant (marked by “eng”). The semi-logarithmic function holds per-capita income  $\ln Y$  and control variants “city, family, edu18, emp, H1, H2 and L1” as interpretative variant, and is referred to as function (1). The semi-logarithmic quadratic function adds the square number of  $\ln Y$  to the original function (1) and becomes function (2). The quadratic function holds per-capita income and its square number, all controlled variables and their square number as the interpretative variants, to become function (3). The cubic function adds the cubic number of all interpretative variants on the basis of quadratic function to become function (4). Below is the equation of function (2) and (3). Equations of function (1) and (4) are omitted here.

$$\text{eng} = C_1 + a_1 \ln Y + a_2 \text{city} + a_3 \text{family} + a_4 \text{edu18} + a_5 \text{emp} + a_6 \text{H2} + a_7 \text{H1} + a_8 \text{L1} + a_9 (\ln Y)^2 \quad (2)$$

$$\text{eng} = C_2 + b_1 Y + b_2 \text{city} + b_3 \text{family} + b_4 \text{edu18} + b_5 \text{emp} + b_6 \text{H2} + b_7 \text{H1} + b_8 \text{L1} + b_9 Y^2 + b_{10} \text{city}^2 + b_{11} \text{family}^2 + b_{12} \text{edu18}^2 + b_{13} \text{emp}^2 + b_{14} \text{H2}^2 + b_{15} \text{H1}^2 + b_{16} \text{L1}^2 \quad (3)$$

Step three is a regression analysis of the above four models. The results are shown below in Figure 21. In a primary re-examination analysis, we find that the square and cubic numbers of some variants in the quadratic and cubic model have little statistical importance with a tiny t value. We then delete these items from the model in Figure 21.

Figure 21: Results of model estimation

Variant	(1) Semi logarithmic function		(2) Semi logarithmic quadratic function		(3) Quadratic function		(4) Cubic function	
	Ratio	t statistics	Ratio	t statistics	Ratio	t statistics	Ratio	t statistics
lnY	-0.05739	-28.66**	-0.12004	-4.63**				
lnY <sup>2</sup>			0.00295	2.42*				
Y					-7.67E-07	-20.8**	-1.24E-06	-19.31**
Y <sup>2</sup>					5.44E-13	13.88**	1.93E-12	12.15**
Y <sup>3</sup>							-7.49E-19	-8.99**
city	-0.00664	-3.50**	-0.00677	-3.57**	-0.00385	-1.97*	-0.12508	-2.21*
city <sup>2</sup>							0.05612	2.22*
city <sup>3</sup>							-0.00774	-2.28*
edu18	-0.01116	-4.35**	-0.01066	-4.15**	-0.03194	-6.80**	-0.02741	-5.83**
edu18 <sup>2</sup>					0.00117	2.84**	0.00098	2.39*
family	-0.01427	-6.41**	-0.01423	-6.40**	-0.01559	-6.78**	-0.01498	-6.54**
emp	-0.01585	-1.95*	-0.01350	-1.65~	-0.03781	-4.53**	-0.03164	-3.82**
H1	0.07106	11.47**	0.07078	11.43**	0.07601	11.89**	0.07543	11.89**
H2	0.02557	5.66**	0.02544	5.62**	0.02615	5.58**	0.02858	6.12**
L1	-0.03938	-6.06**	-0.03979	-6.13**	-0.03298	-4.93**	-0.03149	-4.74**
C	1.06077	49.76**	1.38627	10.19**	0.5790	37.80**	0.64580	16.57**
Adj.R2	0.2463		0.2472		0.1973		0.2130	
Obser.	4195				4195		4195	

Note: For t statistics, those marked with ~ are “statistically significant” at 10%; those marked with \* are statistically significant at 5%; those marked with \*\* are statistically significant at 1%.

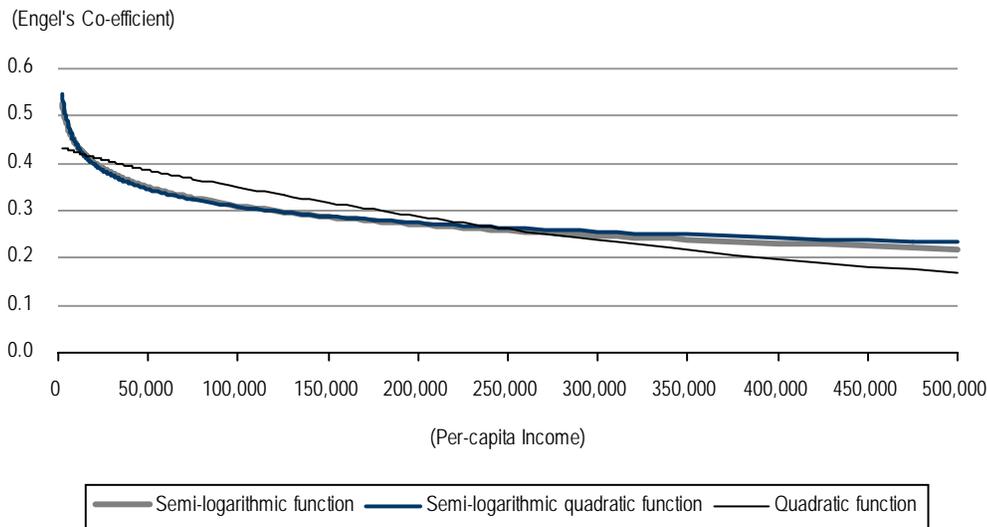
Source: Prof. Wang’s Study.

We find that although the adjusted R<sup>2</sup> (correlation coefficient) of the four models is not very high, most of their variants had statistical significance. This proves that the Engel’s coefficient does have a marked negative correlation with per-capita income, and is also influenced by educational level, number of family members, employment, city scales, and regional characteristics. Among these models, model (2) has the highest adjusted R<sup>2</sup>. During the calculation, we find that models (1) and (2) have very similar results, with closer results to official data among middle and low-income residents. Models (3) and (4), however, show greater differences with official data in all income groups, and fail to show continuous decline of Engel’s coefficient for higher income groups, which is inconsistent with the data as well as our intuition. We then decided to adopt the results from model (2) in the following analysis.

We then decided to adopt the results from Model (2)

Figure 22 tries to simulate the relationship between income level and the Engel’s coefficient. Function (1) and (2) are found to be highly similar. The vertical axis stands for the Engel’s coefficient, with the per capita income on the X axis.

**Figure 22: Simulating curves of different functions of Engel's coefficient vs income**



Source: Prof. Wang's Study

Finally, in order to use the results of the regression analysis to estimate the income levels of urban residents across the country corresponding with different levels of Engel's coefficients, we need to assign the input values of each variant according to national average.

We assign the input values of each variant according to the national average

Statistics in 2007 showed that the distribution of urban residents in mega cities, big cities, medium and small-sized cities and counties (we assumed 1, 2, 3, 4 in the model) was approximately 21%、25%、33% and 21%, respectively. The average is calculated at 2.5. However, we are aware that higher income residents tend to concentrate in mega and big cities, while low-income residents tend to choose medium and small-sized cities as well as counties. Taking into consideration the data, we define the city scale to be between 3.3 and 1.3.

Regarding the average education level of urban residents above 18 years of age, we use 1 to 5 to refer to elementary school and below, junior middle school, senior middle school and vocational school, junior college and undergraduates, postgraduate and PhD. We estimate the national urban average to be around 3. Yet taking into consideration the differences in various income groups, we define the average education of the lowest income residents and the highest income residents to be between 2.6 and 3.8.

Regarding the employment of family members, the statistical national average is around 0.5, and we define it to be between 0.38 and 0.62, as there are some differences in different income groups.

Regarding the number of family members, the statistical national average is 2.9. As low income families usually have more family members, we define the figure to be between 3.3 and 2.6.

Finally, regarding the dietary habits of urban residents in different regions, we have divided the provinces into four groups with a highest, high, ordinary and low Engel's coefficient, with the virtual variant between 0.071 and negative 0.039. The national average is about 0.01.

After the assignment of these controlled variables' values, we use the model to calculate the income levels of urban residents corresponding to different Engel's coefficients, according to the parameters deduced in the regression analysis. In this way, we take into consideration the influence of other factors on Engel's coefficient. The results are disclosed in the next chapter.

### 3) Estimating the real income of urban residents

#### The estimated results of urban residents' incomes

By applying to model (2) the estimated results of the parameters (See Figure 21), along with the Engel's coefficients in the official sample and the national average assigned values of the controlled variables, we can calculate the per-capita income levels of different groups of residents corresponding to different Engel's coefficients. Figure 23 compares the estimated results from model analysis, the official data and the results from the group analysis.

The per-capita income levels of different groups corresponding to different Engel's coefficients are calculated

**Figure 23: Group per-capita income (Rmb) calculated by Engel's ratio method**

Group	Engel's coefficient	Official income	Estimated income: group comparison	Estimated income: model analysis
Minimum income	0.481	4,754	5,685	5,350
Low income	0.459	7,363	8,646	7,430
Lower middle income	0.429	10,196	13,392	11,970
Middle income	0.404	13,984	20,941	17,900
Upper middle income	0.379	19,254	29,910	27,560
High Income	0.340	26,250	47,772	54,900
Maximum income	0.292	43,614	164,034	139,000
All urban residents	0.379	16,885	35,462	32,154
Left-out samples	0.224		658,811	625,000

*Note 1: The 168,85 renminbi average census income of all urban residents is calculated by weighing the average of each census group, while the average issued by the Census Bureau is 15,781 renminbi.*

*Note 2: The estimated income of all urban residents does not include the left-out samples.*

*Source: NBS, Prof. Wang's Study*

The table above shows that the income derived from the group analysis and the model analysis is very close to each other. Although the estimations of income levels of the "minimum income", "low income" and "lower middle income" were all higher than the official data, the differences are marginal. The gap between estimated income and the official data for the "middle income group" and above expanded sharply. The greatest difference lay within the maximum income group, with per-capita income at Rmb164,000, according to group analysis, and Rmb139,000 according to model analysis – 3.76x and 3.19x of the official data, respectively. The results of the estimation from these two methods reflect a similar pattern of income distribution, and also are very similar to the 2007 report (data from 2005), despite different sources of data.

The gap between estimated income and the official data for the "middle income group" and above expanded sharply

Due to the income differences in the high income and maximum income groups, the average per-capita income of all urban residents according to the model analysis is Rmb32,154, instead of Rmb16,885 calculated based on the weighted average income of different income groups in the official data, or the national average of Rmb15,781 released by NBS. This means that estimated income is nearly double the official data.

Estimated income nearly doubled the official data

In Figure 24, we also provide the comparison between the estimated income and official data in the 2005 and 2008 studies (the latter adopted the model analysis method). We find that in the high income group (next to the maximum income group), the gap between the income data based on our estimation and official data has widened significantly, despite the greatest deviation still occurring with the maximum income group. We call the amount of income not captured by the official data "hidden income". It is evident that the families under the "maximum income group" accounted for most of the "hidden income".

**Figure 24: Comparison between estimated income and official data in 2005 and 2008**

Group	Estimated income/ official data in 2005 (%)	Estimated income/ official data in 2008 (%)	Distribution of grey income in 2008 (%)
Minimum income	99.1	112.5	0.4
Low income	101.8	100.9	0.0
Lower middle income	106.9	117.4	2.3
Middle income	114.0	128.0	5.1
Upper middle income	130.6	143.1	10.9
High income	138.7	209.1	18.8
Maximum income	337.6	318.7	62.5
Average and total	177.7	190.4	100.0

Source: NBS, Prof. Wang's Study.

For the two estimated results, that of group analysis may involve bigger errors due to the following two reasons. First, the group analysis uses the average Engel's coefficient and average income level to calculate the corresponding per-capita income for each income group. This cannot exclude the influence of other factors on the Engel's coefficient, and thus can lead to possible inaccuracy of per-capita income. Model analysis, however, successfully controls the influence of other factors and figured out the average influence of these factors nationwide. The results are obtained by taking into consideration the other factors and therefore are more accurate and realistic.

Second, through a regrouping process by Engel's coefficient, the group analysis avoids the errors generally that might occur on the general income distribution due to different distributions of the samples of our survey and that of the official household income survey. Nevertheless, the calculation of the average income still depends on sample distribution within each income group, which could be different from that of the official sample. The influence might not be significant, yet possible errors could arise. For instance, the income levels within the maximum income and minimum income groups are very likely to be unevenly distributed, tilting respectively to the top and bottom. This might not be reflected in the random survey samples. Model analysis, however, obtains the income level directly from Engel's coefficient and other factors and therefore ensures higher accuracy.

For these above two reasons, we apply the estimated results of model analysis (model 2).

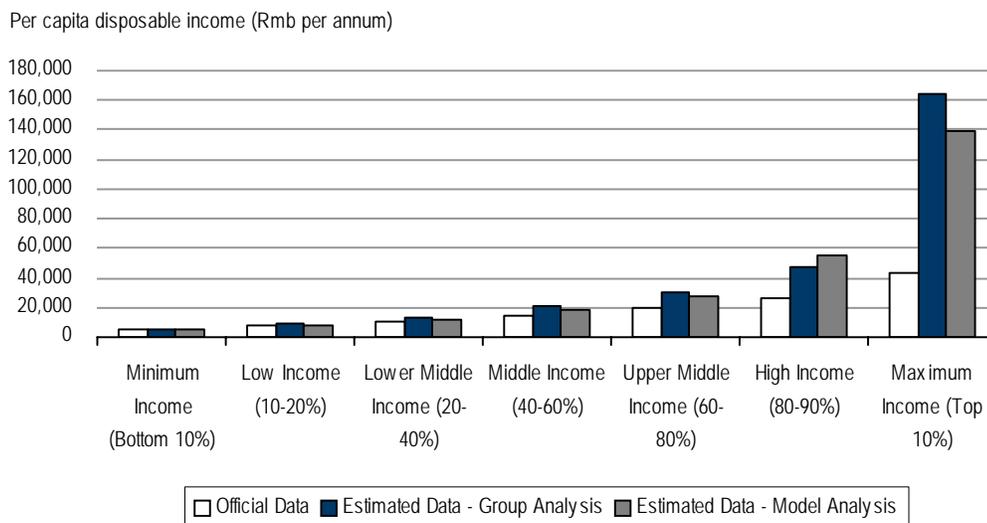
Figure 25 gives a more direct vision of the comparison between estimated income and official data. We can find that the two methods reflect the same tendency, with slight differences. By using model analysis, the per-capita income in the high income group is higher, while the per-capita income in the maximum income group is lower, compared with the results from the group analysis respectively.

In addition, we also attach a chart of comparison between the estimated data and official data in 2005 (See Figure 26). The similarity of the two charts shows that the two surveys have identical results essentially.

The gap between the income data based on our estimation and official data has widened significantly

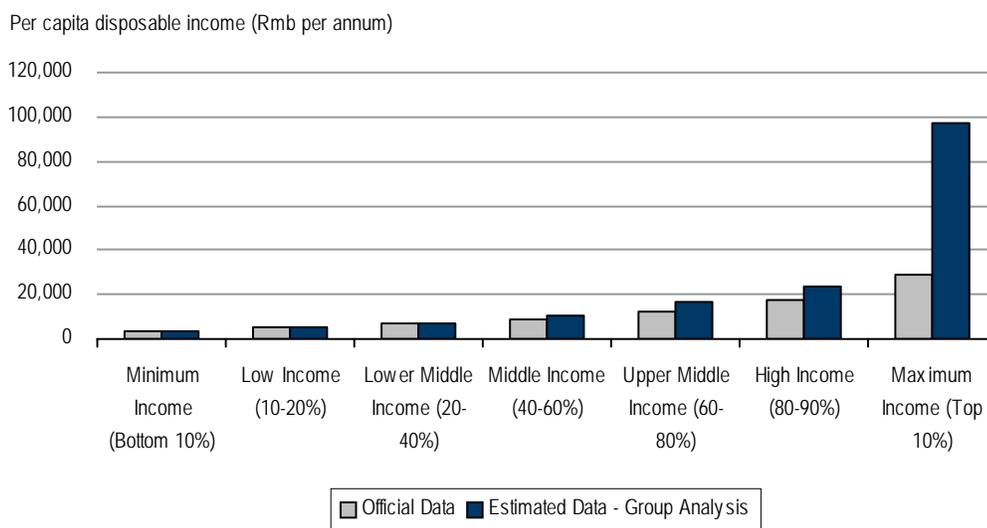
Two estimation methods reflect the same tendency

**Figure 25: Comparison of official and estimated income (2008)**



Source: Company data, Credit Suisse estimates

**Figure 26: Comparison of official and estimated income (2005)**



Source: NBS, Prof. Wang's Study

It needs to be noted that in the 2007 report, the group income level calculated according to survey samples might involve certain positive errors; therefore, we made certain adjustments accordingly. We can see from Figure 23 that the proportion of estimated data and the official data in 2005 after the adjustment was identical with that in 2008 without adjustment, except for the high income group.

However, we need to reiterate that the above estimation can only solve the problem of deliberately withholding information by respondents in the official household income survey. As certain high income samples might still be left out of the official survey, the per-capita income of the maximum income group may still be underestimated.

The same situation occurs in our survey samples. After regrouping the survey samples, a few high income samples are not included in any of the seven groups. These sample families have a much lower Engel's coefficient, and might bring the average Engel's coefficient of the maximum income group well below that of the official household survey data. Therefore, the effective samples exclude the 76 highest income samples, with a per-capita disposable income of more than Rmb400,000 and an average per-capita income of

Rmb660,000. The average Engel's coefficient of these families is only 0.224, while the average Engel's coefficient in the NBS's maximum income group is 0.292. It seems that samples of the NBS might include a few households with per-capita income above Rmb400,000. Therefore, strictly speaking, even the "maximum income group" here cannot really capture the people with the highest income.

It is impossible for us to know the exact proportion of this omitted segment of the highest income group, in order to use the survey samples to reflect the true situation. It is equally impossible for us to use the distribution of omitted samples to represent the sample distribution of all omitted highest income samples in the country because the sample distribution might not be identical with the distribution of highest income residents nationwide. Actually, our survey samples themselves are not complete, as the maximum per-capita disposable income of Rmb1.76 mn may not truly be the highest.

## The gap between hidden income and normal income

From Figures 23 and 24, we can see that the per-capita disposable income of the top income families (accounting for 10% of the total urban population in 2008) is Rmb139,000 instead of the officially established Rmb44,000. This is a difference of 3.2 times. The hidden income of "maximum income families", which is excluded from the official data, accounts for 63% of all hidden income. This, together with the hidden income of the "high income group" (accounting for 20% of the total urban population), makes up more than 80% of total hidden income.

There is a 3.2 times difference in income between our estimation and official data for the top 10% group

If we try to calculate the income distribution gap of urban residents and divide the urban household into ten groups, the actual average income per capita of the top and bottom income family groups is Rmb139,000 and Rmb5,350, with a gap of 26 times (in our last report, the gap in 2005 was 31 times), rather than the nine times according to census data. The gap is smaller than the last estimation mainly because the per-capita income of the minimum income group in our study is 12 % higher than the official data. Also, in our survey, we have excluded a few negative income samples, as these families are normally not from the low income class but in a temporary business deficit. The exclusion of these samples increases the estimated income of minimum income group to some extent. We believe that the official household income survey, however, included such samples.

The gap between top and bottom groups is 26 times

If we assume the 20% maximum income urban families and 20% minimum rural income families to have an approximate representation of the 10% maximum and minimum income families in the nation, then the average per-capita income of 10% maximum income families is Rmb97,000, while the average per-capita income of 10% minimum income families is Rmb1,500, with a 65 times gap in 2008 (55 times that in 2005), instead of the 23 times in the official data.

We believe the hidden income occurs mostly in urban areas. If we assume the statistics of rural resident income reflects the actual income situation and use the average urban per-capita income in our study to replace the official data and multiply the urban and rural per-capita income with the urban and rural population respectively, we can get an approximate national disposable income of Rmb23.2 tn in total in 2008. Yet if we calculate according to the official data, the amount is only Rmb14 tn. This means that the total hidden income in China is Rmb9.26 tn, almost doubling the amount of 2005 (Rmb4.85 tn, up by 91%). Meanwhile, nominal GDP increased only by 71.4%. The hidden income is expanding at a much faster pace than that of GDP.

Hidden income occurs mostly in urban areas

Including the hidden income, total national disposable income in 2008 has increased by 69.3% compared with 2005, similar to nominal GDP growth. According to the official statistics (ex. hidden income), the national disposable income in 2008 increased by 57.4% only from 2005, slower than GDP growth. As a % of GDP, the ratio declined from 48.4% in 2005 to 44.5% in 2008, down by 3.9%. It is obvious that hidden income has been rising much faster than that of normal income.

Disposable income has grown at the same rate with GDP if we include hidden income

**Figure 27: Income changes 2005-08**

	2005	2008	Change %
Per-capita urban disposable income (Rmb, official data)	11,100	16,885	52.1
Per-capita urban disposable income (Rmb, Wang's study)	19,730	32,154	63.0
Urban population (mn)	562	607	7.9
Per-capita rural net income (Rmb)	3,537	5,171	46.2
Rural population (mn)	745	721	-3.2
Total disposable income (Rmb bn, official data)	8,876	13,974	57.4
Total disposable income (Rmb bn, Wang's study)	13,727	23,237	69.3
Estimated hidden income (Rmb bn)	4,851	9,263	91.0
GDP (Rmb bn)	18,322	31,405	71.4
Total disposable income (% of GDP, official data)	48.4	44.5	-4.0
Total disposable income (% of GDP, Wang's study)	74.9	74.0	-0.9
Estimated hidden income (% of GDP)	26.5	29.5	3.0

*Note 1: There are two different sets of statistical data of urban disposable income per capita and rural disposable income per capita. Here, we list the weighting average of group income published by the Census Bureau. The urban disposable income per capita issued by the Census Bureau in 2005 and 2008 was 10,493 and 15,781 renminbi, respectively, 5.5% and 6.5% lower than the weighting average figure. The official rural net income per capita is much lower than the average (about 8%), for unidentifiable reasons. Note 2: National residential disposable income (statistical data) is calculated by the surplus of the mortification of urban per-capita disposable income and rural per-capita net income published by the statistics (numbers in the first and fourth line of the following table) with the urban and rural statistical population respectively. Note 3: The proportion of hidden income in GDP is calculated when GDP is not adjusted.*

Source: Prof. Wang's Study, NBS

## Other means of verifying existence of hidden income

There have been obvious contradictions and confusions in terms of income statistics, macroeconomic data, and sales of housing, automobiles and other luxury goods. These contradictions basically disappear once we include the above hidden income in the residential income. This is a key to proving the rationality of the above estimation. If such huge hidden income does exist, then it should naturally reflect itself in other macro data of the national economy.

### 1) Consumption and savings

According to the official data of urban and rural household incomes and population, the total savings (the balance between disposable income and consumption) in the nation should have been Rmb3.55 tn in 2008. Residential savings usually take different forms or are used in various direct and indirect investments. We can calculate the approximate total savings of residents by gathering all the information about residential investment (excluding loans).

In 2008, household deposits of urban and rural residents in the banking system increased by Rmb4.54 tn. This means that the increase in bank household savings already surpassed the estimated amount of savings based by the official household survey data by about Rmb1 tn already.

In the same year, residential property sales were Rmb2.12 tn (not including secondary market transactions). If we deduct the Rmb300 bn increase in new mortgage loans, this reflects residential savings of Rmb1.82 tn in the form of property purchases.

Also, within 2008, Rmb371.1 bn was spent on private housing construction in rural areas. Indeed, it is also common for urban residents to build their own houses too, with self-built houses accounting for nearly 15-16% of self-owned property. Although it is less popular for urban residents to build their own property, the total amount of money spent by urban residents to build their own home could equal that of rural residents, given that the cost of building is much higher. As most residents prefer to use personal savings instead of borrowing from banks to build their own homes, we estimate that Rmb700 bn of residential savings has been spent on urban and rural private housing construction.

In 2008, shareholders' equity of private industrial enterprises (above a designated size) increased by Rmb1.09 tn, including both new capital injections by the owner and retained earnings. Private sector investment in the service industry is estimated to be more than Rmb1 tn, comparable to that of industrial enterprises. Private investment in small industrial and service sectors (below the designated scale), from 2,874 individual business operators, as well as the construction industry is estimated to be between Rmb500 bn and Rmb1 tn. Overall, private investment in industrial and service enterprises could use up Rmb2.5-3 tn in personal savings.

In 2008, the tradable market cap of the A-share market had shrunk by 50.9%, while the Shanghai Composite Index and Shenzhen Composite Index dropped even more by 65.4% and 62.4%, respectively. Effectively, this means a net investment of Rmb1.35 tn in the stock market that year through IPOs or placements. On the other hand, Rmb1.7 tn worth of treasury and corporate bonds was invested during that year. If one third of the investment comes from private sector investment, then bonds and stocks together absorbed Rmb1 tn worth of private savings.

Finally, it is estimated that investment in futures, gold, foreign exchanges and other financial derivatives, as well as increases in cash on hand or deposits in overseas banks, could amount to another Rmb500 bn.

Adding the financial and physical investment by private households, total household savings in 2008 should be at least Rmb11-11.5 tn, instead of the estimated Rmb3.5 tn, according to official household survey data. This shows that at least Rmb7.5-8 tn in hidden income is excluded from the official statistics. Besides, the total residential consumption is calculated to be Rmb9.46 tn. Although the consumption statistics involve much less omission than income statistics, there are certain omissions. If we assume a conservative omission of 20%, it would mean an underestimation of Rmb2 tn in residential consumption. Taking this away from the estimated increase in hidden income of Rmb11-11.5 tn, the total hidden income in 2008 should be at least Rmb9.5-10 tn. This coincides basically with the Rmb9.3 tn hidden income calculated by the model analysis.

The above situation has not occurred only in 2008. An analysis of macro data in recent years show similar results. The total hidden income seems to be constantly expanding.

## 2) Property price and income

Global experience tells us that housing prices should be between three to five times annual household income to be affordable. In recent years, China's housing prices have been about 10 times the household income. Total residential property sales in 2009 reached Rmb3.8 tn, rising sharply from Rmb2.1 tn in 2008. Even accounting for mortgage financing, this is still much higher than the total income of the top 10% income families, based on the official household survey.

Total property sales value is much higher than the total income of China's top 10% of income families based on official data

According to the 2008 NBS household income survey, each household with an average size of 2.91 people had a per-capita disposable income of Rmb15,780. This implies annual household income of Rmb45,900. Residential property sales in the primary market during 2008 reached Rmb2.12 tn, with a total floor space of 593 mn sq m. If we assume the average size of each apartment sold to be 110 sq m, then 5.15 mn units were sold with an average price of Rmb411,000. The average selling price is equivalent to nine times the average household income based on the official data. Based on the same methodology, the ratio of property price to average household income in 2007 and 2009 would be more than 10 times. This is well above the affordability of urban residents. We also need to consider that some families buy their property in the secondary market, and pay much higher prices, and that such secondary market sales have not included in the property sales data. Even so, the real estate market remains very buoyant, and this could be a reflection of the underestimation of the official personal income.

According to the official household survey, the top-20% high income group (including 10% maximum income and 10% high income families) had a per-capita income of Rmb35,000 and an average household income of Rmb89,000 in 2008. Based on the average property prices in the primary market, the ratio of the housing price and household income is around five. This means that even high income families were barely capable of purchasing property in 2008. However, this is not consistent with what have we observed.

According to the household survey, even high income families have been barely capable of purchasing properties

During the 20 years between 1990 and 2009, more than 46 mn apartments were sold, more than the total number of urban high-income families (around 41 mn households). Our survey data shows that most high-income families do not need to buy property from the market (they either live in properties allocated by their companies or they bought property during the housing reform era in the late 1990s), while for those who have purchased property from the market, the price of this is much higher than the national average. On the other hand, around one third of families own a second, third or even more residences. This shows that their property purchases are mainly for investment purposes and their income levels must be much higher than the official data.

With the number of property units sold, income level must be much higher than that of official data

### 3) Ownership of automobiles

According to the private car ownership data, individuals owned 28.14 mn private sedans in 2008. Assuming 90% of these belong to urban residents, the ownership ratio would be 12.1% (12.1 cars in every hundred households). This shows that car ownership must be quite common among the top 20% income households. In fact, some middle income families have also purchased cars. The data for automobile ownership is based on the number of driving licences issued and the annual inspection. These should be rather accurate. According to the household income survey of urban residents, however, every 100 households own only 8.8 private automobiles, nearly one third lower than the previous figure. This indicates a large amount of high-income family samples is not captured in the official sample. What is more ironic is that the official income data implies that even high-income households cannot afford to buy a car.

According to the household income survey, every 100 households own only 8.8 private automobiles

It is reasonable to assume that the prices of a private sedan should be about Rmb100,000, with Rmb20,000 related expenses each year (on fuel, maintenance, insurance, annual inspection, parking and tolls). In this case, it is reasonable to expect that families who can afford to own a car should have an annual household income of not less than Rmb200,000. According to the official data, the annual disposable income of the top-20% households was only Rmb89,000, which means that they simply cannot afford to buy a car. In contrast, according to our study, the top 20% of urban households have an annual income of Rmb240,000. Thus, most of them can afford to buy a car. This means that there is a high probability of underestimation of household incomes based on the official data.

## 4) Grey income and its sources

### a) What does this huge hidden income tell us ?

The existence of such a high amount of hidden income, and concentrated in the hands of a small group of people, cannot be simply explained by statistical problems. According to the estimates in Figure 24, middle- and low-income residents tend to understate their actual income (usually by less than 30%, though). This could be interpreted as a natural statistical error of the official survey and probably due to the psychological tendency of the respondents and the social environment of under-reporting one's income. However, the hidden incomes of the middle- and high-income groups have risen sharply. The actual income of the maximum income group (the top 10% households), in particular, is several times the amount of the official data. A profound systematic cause should for this phenomenon needs to be found.

Grey income exists and it is not due to statistical errors

The concept of "grey income" has attracted much controversy lately. Some refer to grey income as illegal income that needs to be made unlawful, instead of being standardised. They say that any standardisation of grey income would mean rationalising illegal income. Others point out that the concept itself is "unscientific" without a clear definition, and should be abandoned. However, the concept of "grey income" is created due to the large amount of income that cannot be clearly define as legitimate or otherwise. Abandoning the concept would not help stop the existence of grey income, but would only lead us to avoid the major problem, which is not helpful in finding a solution for it.

How should we deal with grey income?

The "grey income" that we have used here mainly refers to the following situations. First, some income may lack a clear definition by law or regulations in terms of its legitimacy. For instance, present and gift money received during weddings are part of the custom and permitted by law. When relatives and children of Party officials are involved, it is understandable as long as the amount of money is reasonable. Some officials, however, collect huge amounts of money in the name of their children and relatives' weddings, with the amount exceeding hundreds of thousands or even millions of renminbi. We believe these are, in effect, bribes. A legal limit should be set to define the acceptable amount of gifts for such events with effective supervision. Any breach of the limit should be strictly prohibited and counted as illegal income. Yet, without clear laws and regulations, this income can only be called grey income.

The problem is that there is no clear definition for grey income

Another example is that of government organisations and institutions tending to provide staff with certain bonuses and welfare, in addition to salaries. This is supposed to be a normal and legal practice. However, some government institutions and state-owned enterprises that are highly profitable due to their monopoly power use public funds to gift welfare or extra income to officials, managerial staff and workers far above normal market practices, sometimes even avoiding taxes. This undermines the public interest. Yet, without a clear definition in laws and regulations, this can only be referred to as grey income.

Grey income in government organisations and institutions

Of course, some proper income has become grey income because there is no law or regulation to define its legitimacy.

Second, some income that is likely to be illegal can only be treated as grey income because we do not know its source and cannot determine whether it is legitimate. The examples include benefits in the property sector through insider trading and fake auctions, windfall profits in financial markets through insider information, spreading false information, market manipulation, and government officials benefiting through the misuse of power for personal gains. Without strong proof, such income is usually not treated as illegal income.

Some grey income is indeed illegal

As the cases of exposed illegal income have been rare, the "grey income" that we refer to here, apart from that without clear legal definition of status, should cover most of the illegal income.

The first situation shows the flaws in the legal system, with grey areas and loopholes in many areas. The second situation shows the inconsistency between legislation, enforcement and supervision, in that key areas of economic activity and behaviour of civil servants are not supervised effectively. Both lead to distortion in national income distribution. The existence of substantial grey income in society points to major defects in the economic system. In order to solve the problem of grey income and the huge income gap, an aimless discussion on stopping this phenomenon is not a solution. The fundamental solution lies in the promotion of system reforms to perfect the national distribution system, and the setting up of a legislation and supervision mechanism for income distribution, especially concerning public funds, resources and benefits, in an effort to effectively rationalise income distribution.

A huge amount of grey income distorts national income distribution and the economic system

## b) Sources of grey income

An important source of grey income is the various corrupt activities arising from the abuse of administrative power. This requires a strict legal definition concerning the use of public resources and bureaucratic power, as well as the establishment of a set of regulations to supervise the utilisation and allocation of public resources. Self supervision by government authorities is far from enough. Transparency is needed for the public to supervise government performance.

Various corruption activities arising from the abuse of administrative power

Under the current circumstances, grey income is usually connected with the following phenomena.

### Abuse of power for personal gains

A survey in 2006 covering 4,000 enterprises in China included such a question: "How much did your company informally pay officials of government and regulatory agencies?" Only 19.8% of the managers replied "None", while 80.2% replied "a little", "quite a lot" and "a lot". Within which, those who answered "quite a lot" and "a lot" accounted for 18.1%. This shows the severity of corruption. The situation is worse in industries related to resources, monopolies, and those involving supervision of many administrative authorities. The proportion of managers saying that informal payment is "quite a lot" or "a lot" accounted for 35.2% in the mining industry, 24.3% in the power sector, 23% in the property sector and 24.2% in the chemicals industry, all above the average.

Corruption is a serious issue in China

The phenomenon of direct usurping of public resources is also common. According to the audit report of the National Audit Office regarding the central government budget in 2009, 5,170 fake invoices were found in the 29,363 doubtful invoices already reimbursed by 56 central government departments, with a total sum of Rmb142 mn. This is understandable from the fact that the sale of fake invoices is now rather common, as we can frequently see people selling fake invoices in the streets and encounter such advertisements in SMS and emails. The Rmb142 mn discovered by the National Audit Office could just be the tip of the iceberg.

But corruption is not uncommon

Another "emerging industry" that reflects the expanding trend of grey income is the gift purchase industry. In Chinese cities, an increasing number of companies are in the business of buying luxury cigarettes, wine, medicine, gold and silver accessories, and gift coupons at a discount. Buying luxury products or consumer coupons at high prices and selling them at low prices seems unreasonable. There's only one explanation for this strange phenomenon, i.e., many have received such items as gifts and sell them for cash at a discount. A key reason for such a rampant gift-giving culture is that it is a safer form of corruption, compared with the direct exchange of cash.

More people are becoming involved in corruption through luxury gift purchases

### Public investment and corruption

Public investment is another source of grey income. A recent example is the Beijing-Shanghai High Speed Train Project and the Western Section of West-to-East Natural Gas Transmission Project Line II. When these projects were audited, overcharging to the extent

of Rmb815 mn in project processing and construction was found, in addition to Rmb1.794 bn extra expenses on irrelevant fees in construction costs and reimbursing of fake invoices.

In past years, there have been many expensive, but low-efficiency projects, in different parts of China. These are important sources of corruption money. A common practice is giving the business to an insider and getting kickbacks from the contractor. In an audit by the National Audit Office, it was found out that the construction contract worth Rmb3.6 bn in the West Section of West-to-East Natural Gas Transmission Line II Projection, about 80% of the total construction contract, was not awarded according to proper bidding procedures, and Rmb2.7 bn worth of the contract was subjected to unauthorised sub-contract and awarding of contracts not in accordance with the rules and regulations.

Corruption has caused a lot of costly but low-efficiency public projects

### Rent seeking from land supply

For a long time, huge profits in land transfer has been a major target of parties with vested interests. Currently, as local governments do not have adequate funding resources under the current fiscal system for infrastructure construction, city management and provision of public services, they rely heavily on the proceeds from the sale of land. However, the government is actually drawing down in advance the future 70 years' land value to foster a temporary prosperity. A more serious problem is the system loopholes in the management of these huge benefits.

Local government relies heavily on land sales

The total land sales proceeds amounted to Rmb1.5 tn in 2009. This is equal to 20% of the Rmb6.8 tn national fiscal revenue – which does not include land sales proceeds. In a few places, management of such benefits was very chaotic and land sales revenue became a major source of illegal income for local government officials. Meanwhile, the authority of local government officials to exempt some land transfer fees could be another source of seeking corruption money. The National Audit Office reveals that in 2009, Rmb68.4 bn of land sale revenue in 11 provinces was not included in the budgetary process, while Rmb38.1 bn in land sales revenue was not collected. The profit from such evasions of land sales revenue could end up being the grey income of some officials.

Government authorities have also helped the property industry to enjoy certain form of monopoly power

The distribution of land profits is not limited to land sales revenue. Due to the scarcity of land resources, the government has the authority for land approval, expropriation and sales. This has made land supply and the related property development industry, enjoy certain forms of monopoly, and has created a series of illegal rent-seeking opportunities. It is estimated that the total cost of construction (including various taxes) of urban residential property amounted to Rmb2,500/sq m in 2009. As the average national property price was about Rmb4,500/sq m, total profits in the estate industry could reach over Rmb1 tn. Indeed, according to the sales area and sales prices published by the National Bureau of Statistics, however, total profit should reach Rmb1.7 tn. This is equal to more than half of the total industrial profits of the country in 2008. In contrast, the number of employees in the property sector that worked in industrial enterprises in 2008 was only 1.3%, while the assets of the real estate industry were only 6% of the industrial enterprises. If these estimates are correct, the real estate sector seems to be a highly profitable industry. Clear proof of this is real estate developers accounting for six of China's top-20 richest individuals in the *Forbes 2010* list.

However, the Rmb1.7 tn profit of the real estate industry does not all go to real estate developers. In order to acquire good pieces of land from local governments, real estate developers sometimes need to “contribute” significantly to people who have the authority to approve land, among other things. This is counted in the development cost in various forms, making the reported profit much lower. Therefore, the huge profit of Rmb1.7 tn is actually divided between property developers and government officials. As these profits are paid by ordinary middle-class residents in the form of high property prices, this is, in fact, a negative redistribution of wealth between ordinary citizens and the powerful property developers and government officials.

We believe that without the implementation of property tax reform and relevant reforms for the land and fiscal systems, the strange circle of “high land price-high housing price-negative redistribution of income” will never be corrected.

### **Distribution of other monopolised profits**

According to the income surveys of 2008 and 2009, the average income of monopoly industries (such as oil, tobacco, power, telecommunication, bank and securities) is about twice the national average. These data, however, fail to fully reflect the real gap between different industries.

First, the actual per-capita income of monopoly industries is far more than its reported income. According to some estimates, the actual income gap per capita between these industries and national average is often five to 10 times.

Second, within the monopoly industries, there is an extremely uneven interior distribution. There is a wide income gap between ordinary staff and senior management.

The wide income gap between monopoly industries and competitive industries is caused by the great difference in their profits. The huge profits of the former come either from the resources they own or from the monopoly pricing power, and cannot be regarded as normal business profits.

The monopoly of resources or markets leads to monopoly pricing power and huge profits, causing the distribution of national income to tilt towards the monopoly sectors. In any economic entity, the natural monopoly of certain sectors is inevitable due to the scarcity of natural resources and exclusiveness of economies of scale. Problems should be solved through taxation, anti-trust legislation, public consultation of price determination and public supervision. This is especially crucial for the resource industries and monopoly state-owned enterprises. After years of planning, pilot practices that require state-owned enterprises to pay dividend to the government and resource tax reforms have been implemented successively. We are still waiting to see whether these reforms have brought about meaningful changes.

Some sectors that normally belong to the competitive sectors can also fall prey to monopoly due to inappropriate economic policies. Unsuitable administrative intervention can be one of the factors, too. The wider range of monopolies and the imperfection of the supervision mechanism of them cause a shrink in market competition and an imbalance in income distribution. Therefore, the key to solving income distribution distortion is restricting monopolies, promoting competition, adjusting monopolised profits and preventing the usurping of public interests, and their influences on economic policies by vested interest groups in monopolising sectors.

The average income of monopoly industries is about twice the national average level

Problems should be solved through taxation, anti-trust legislation, the public consultation of price determination and public supervision

## 5) Revisiting income distribution

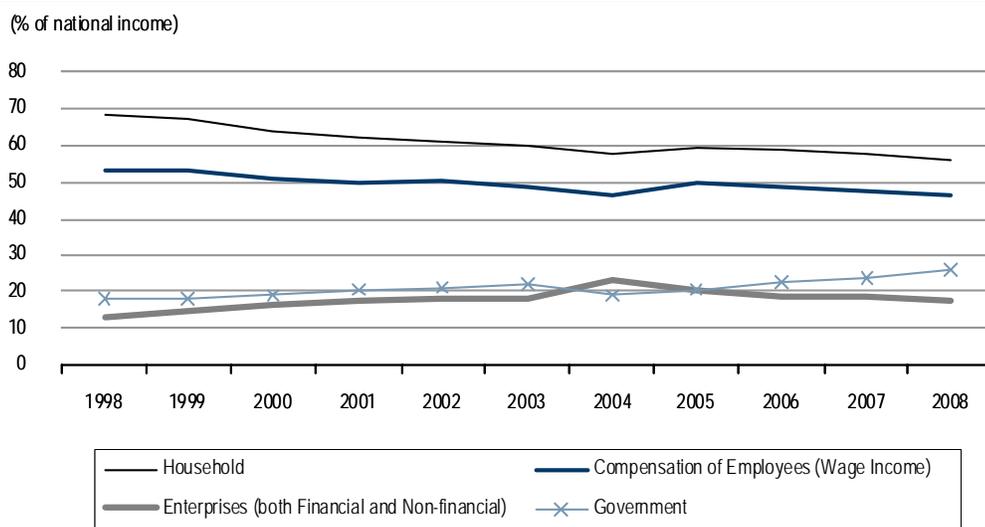
Based on the NBS statistics from the official household income survey, we estimate household disposable income in 2008 was Rmb14 tn – 44.5% of the national disposable income. In the Flow of Funds (FOF) accounts, however, the household disposable income was Rmb17.9 tn, Rmb3.9 tn higher than the household disposable income based on NBS data. On the other hand, the estimates from the FOF accounts was Rmb5.4 tn lower than the estimated Rmb23.2 tn household disposable income in this study. The inconsistency of FOF account and household income data by NBS was mainly due to difference in the sources. The former mainly relies on data from the Economic Census, which are collected from enterprises, instead of household surveys. It seems that the Economic Census is doing a better job in capturing the missing income data. Still, it fails to include grey income in the census. Therefore, we think the Rmb5.4 tn gap between the household disposable income estimated in this study and that from the FOF account is grey income.

We think the Rmb5.4 tn gap between the household disposable income estimated in this study and that from the FOF account is grey income

According to FOF accounts, disposable household income in 2008 was Rmb17.87 tn, or 56.4% of the GDP. Of this, Rmb14.75 tn was wage income – 46.6% of GDP. In other words, non-wage income accounted for about 10% of the GDP. The disposable income of enterprises (including both financial and non-financial corporations) and government accounted for 17.7% and 25.9% of total disposable income, respectively.

Figure 28 shows the structural changes in national income distribution by using data from the FOF accounts. Compared with 1998, the share of household disposable income in total national income in 2008 has dropped by 12%, while the share of wage income has dropped by 7%. The gap between total household income and wage income has narrowed, with non-wage income dropping 5.5 p.p. The share of income from enterprises and government has increased by 4 p.p. and 8 p.p., respectively, with the share of enterprises peaking in 2005. Compared with 2005, household disposable income in 2008 dropped by 3%, mainly due to the decline in the share of wage income.

**Figure 28: Structural changes in national income distribution**



Household disposable income in 2008 dropped by 3% from 2005, mainly due to the declining share of wage income

Source: NBS: Flow of Funds Accounts 1992-2004, China Statistical Yearbook 2008, 2009

However, if we use the estimated household disposable income from our study (including the “hidden income” as defined in the earlier section) to replace household disposable income in the FOF account, we would draw very different conclusions. It is reasonable to expect that grey income does not come from wages (as the respondents have no reason to hide them); we include the difference between household disposable income estimated from this study (and the 2007 study) and FOF accounts – Rmb5.37 tn in 2008 and Rmb2.67 tn in 2005 – as non-wage income in household income.

With this adjustment in the disposable incomes of households, it is necessary to fine-tune the national disposable income, as well as national income and GDP, accordingly. Household income is a major part of the total national income. Underestimation of household income would definitely affect the estimates of national income and GDP.

Re-estimation of national income and GDP

For instance, many companies include the grey income that they have paid to various parties (including their staff or people outside the company, particularly any corruption bribes) as 'other costs' such as raw material inputs, travel, transportation and conference expenses. Through the over-estimation of production costs and other types of SG&A charges, they have underestimated the "value-added" (= revenue minus input costs) of the company in the national account statistics. This is particularly true for the real estate sector; yet, it is also popular among other industries (which helps explain the active market of selling fake invoices in China). Given that under the production approach in national accounting GDP is the aggregate total of "value-added" of all enterprises, if the underestimation of "value-added" becomes very widespread among enterprises, GDP will be similarly understated.

The grey income that companies paid as costs is not included in the national account statistics

Another source of grey income comes from public funding, public property, and the transfer of other people's income and property. This is a hidden redistribution of income. This includes the transfer of public investment funding and other government fiscal and non-fiscal funding to the private accounts; loss of state assets (like selling state assets to the private sector below market value); valuation loss during the development and transfer of land (like selling state-owned land to insiders below market price), as well as the transfer of individual property and income, due to bribes, and property speculation. This part of grey income does not result in an underestimation of GDP, but only increases household income (though only a few benefit), at the expense of income distributed to government and enterprises. Or else, it reduces the income of a group of people and increases that of some others.

Another source of grey income comes from public funding, public property, and the transfer of other people's income and property

Accordingly, we have revised up the national disposable income and national income in 2008, assuming 60% of the Rmb5.4 tn grey income is an understatement of the "value-added" of enterprises. For the remaining 40%, we made some deductions from the disposable income of enterprises and government. The same adjustment is made for the 2005 national income data. Figures 29 and 30 show the distribution of national income to households, enterprises and government, before and after the adjustment.

**Figure 29: National income before and after the adjustment: 2005-08 (Rmb tn)**

	Before adjustment		After adjustment	
	2005	2008	2005	2008
Households	11.06	17.87	13.73	23.24
Compensation of employees (wage income)	9.28	14.75	9.28	14.75
Non-wage income	1.78	3.12	4.45	8.49
Enterprises	3.73	5.61	3.20	4.74
Non-financials	3.60	5.20	3.09	4.39
Financials	0.13	0.41	0.11	0.35
Government organisations	3.83	8.20	3.29	6.92
<b>Total national income</b>	<b>18.41</b>	<b>31.62</b>	<b>20.01</b>	<b>34.84</b>

We have adjusted upwards national disposable income and national income

*Note: The structural data of national income in 2008 before adjustment are the estimated data obtained by linear extrapolation of data from Funds of Flows Accounts (NBS, 2005-07) with the adjustment of certain prices. It is identical in proportion to the 2007 data. The structural data after the adjustment are obtained by allocating the estimated hidden income into each sector.*

*Sources: NBS, Prof. Wang's Study*

**Figure 30: Structure of national income**

	Before adjustment (%)		After adjustment (%)	
	2005	2008	2005	2008
Households	60.1	56.5	68.6	66.7
Compensation of employees (wage income)	50.4	46.7	46.4	42.3
Non-wage income	9.7	9.9	22.2	24.4
Enterprises	20.3	17.7	16.0	13.6
Non-financials	19.6	16.4	15.5	12.6
Financials	0.7	1.3	0.5	1.0
Government organisations	20.8	25.9	16.4	19.9
<b>National income</b>	<b>101.1</b>	<b>100.2</b>	<b>101.0</b>	<b>100.2</b>

Sources: NBS, Prof. Wang's Study

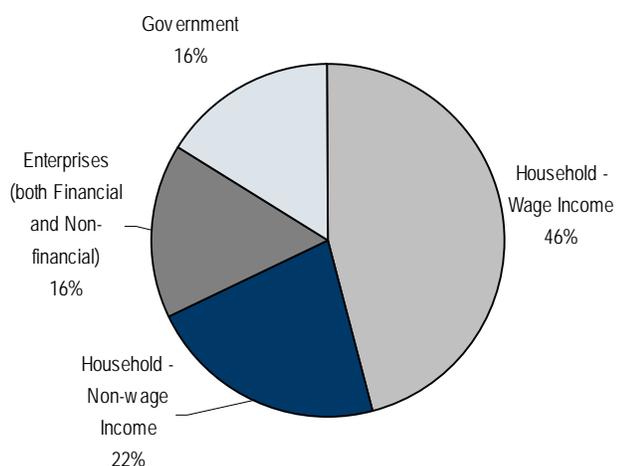
Figure 30 shows that before the adjustment, household income accounted for only 56.5% of national income in 2008. This changed to 66.7% after the adjustment, up by 10 p.p. According to data before the adjustment, the proportion of household income dropped by 3.6 p.p. points in 2008 versus that in 2005. With the adjustment, however, the decline was only 1.9 p.p. This means that when grey income is included, the actual proportion of household income to GDP is not that low, and is not declining very rapidly.

After the adjustment, household income is higher

This is not necessarily encouraging news. As shown in Figure 30, the proportion of wage income is lower than it was before the adjustment, and is declining faster. The proportion of wage income to national income in 2008 dropped from 46.7% to 42.3%, down 4.4 p.p., after the adjustment. Compared with 2005, the wage income share dropped by 4.1 p.p. The proportion of non-wage income rose significantly by 14.5 p.p. to 24.4% in 2008 after the adjustment, and 2.2 p.p. higher than that in 2005.

However, wage income is lower after the adjustment

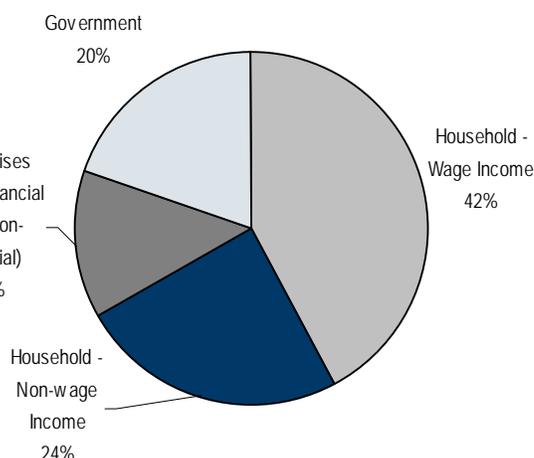
**Figure 31: Distribution of national income in 2005**



\* After adjustment

Source: NBS, Prof. Wang's Study

**Figure 32: Distribution of national income in 2008**



\* After adjustment

Source: NBS, Prof. Wang's Study

Although the proportion of household income after the adjustment is significantly higher than the official data, it is composed mainly of grey income instead. The proportion of wage income in national income is still very low, and given that most of the grey income is concentrated in the top 10-20% of households, it means that China's income inequality is much bigger than that in the official data. Also, it is very likely that unlike normal capital return, grey income usually does not help improve competitiveness and efficiency. On the contrary, a large amount of it is likely to come from loss of enterprise and government income or usurpation and plunder of ordinary household income and property. This hampers justice, undermines economic efficiency and becomes a major factor for social conflict and instability.

China's income inequality is much bigger than that implied by official data

Compared with most countries in the world, especially developed countries, the proportion of wage compensation in national income in China is below average, while the proportion of non-wage income is above average – even based on official data. Data after the adjustment makes the situation even worse. According to the estimated data after the adjustment, the proportion of government income is lower. This does not mean that government organisations have fewer financial resources, but that a part of government income is lost due to poor management.

Compared to other countries, China has a higher portion of non-wage income

In addition, though the proportion of government income in China is below the average of the developed countries, there are significant differences in the utilisation of such income. In most developed countries, government income is mainly used for social security and providing public education, healthcare and housing. A comprehensive social security and public service system is established for all citizens. Though the situation in China has improved in recent years, the overall social security net is still very underdeveloped and unable to cover the 1.3 bn population. The level of public services provision varies significantly for different regions and professions and most people cannot benefit from it. A good example is the significant shortage of public housing. Currently, only 1-2% of urban residents can live in low-rent public housing. There is also great injustice in the distribution of public housing, with civil servants accounting for a far higher proportion compared with the general public.

On the other hand, the proportion of government income in China is lower

On the other hand, an extraordinarily large proportion of China's fiscal income is spent on consumption by government departments (in the form of administrative spending) and investment spending. Some of these investment projects are unable to generate reasonable economic returns and, in some cases, public funds are channelled through such projects to "connected" individuals.

## Conclusion

This report is based on the income and expense data of more than 4,000 urban households from 64 cities in 19 provinces in 2009. By adopting group comparison and model analysis, respectively, the author has obtained the parameters between Engel's coefficient and per capita income, and has used it to adjust the per-capita disposable income of different income groups in the official household survey. The analysis shows that the top-10% of households should have a per-capita disposable income of Rmb139,000 in 2008, instead of the official data of Rmb44,000. High income households (the top 20-30%) should have a per-capita disposable income of Rmb55,000, instead of the officially announced Rmb26,000. Some 80% of hidden income, not reflected in the official survey, belongs to the top 20% of households. Two thirds of the hidden income comes from the top 10% of households.

After including the hidden income, urban disposable income per capita reaches Rmb32,000, almost double that of the official data. Total household disposable income in 2008 is estimated to be Rmb23.2 tn, Rmb9.3 tn higher than the Rmb14 tn calculated based on the official NBS household income survey and Rmb5.4 tn higher than the Rmb17.9 tn total calculated by the Flow of Funds (FOF) accounts in the Economic Census. This Rmb5.4 tn is referred to as grey income.

Compared with the adjusted household income in 2005, both the hidden income (Rmb9.3 tn) or grey income (Rmb5.4 tn) in 2008 doubled, rising at a much faster pace than nominal GDP between 2005 and 2008. Due to the existence of grey income, GDP and national income could be underestimated. According to our estimation, grey income in 2008 should total around 15% of national income, up from 13% in 2005.

The existence of hidden income has expanded the income gap remarkably, in our opinion. The per-capita income gap between the incomes of the top 10% and bottom 10% of urban residents rose from 9x (based on the official data) to 26x, after the adjustment. The per-capita income gap between the top 10% of urban households and bottom 10% of rural households is adjusted from 23x based on the official data to 65x. Taking into account the existence of hidden income, the Gini coefficient of household income distribution is remarkably higher than the 0.47-0.50 calculated by different experts.

Such a concentration of hidden income in high-income groups demonstrates that much of it is not about simple statistical problems in the household survey but potentially income from illegal sources. Such income includes income without clear definition under laws and regulations in addition to its legitimacy, as well as income from an unidentifiable sources which is practically illegal. The facts show that grey income has its origins in the misuse of power and is closely connected with corruption.

The widespread existence of grey income has significantly distorted national income distribution and reveals the lagging development in social reforms compared with economic reforms. Once government power is united with capital, the free competition of the market economy begins to be replaced by a monopoly of crony capitalism, leading to disparity in income and property distribution, lower economic efficiency and acute social conflicts.

# Macau gaming

## It is all about liquidity

Over 70% of gross gaming revenue (GGR) in Macau comes from the high-roller segment, in which players gamble on credit, either from the casinos directly (mostly for non-mainland Chinese players) or from junket operators. Note that to offer credit to mainland Chinese players, junkets need to solve two issues: having working capital in Macau in Hong Kong and US dollars (as casinos normally do not accept renminbi) and to convert renminbi from players (both initial deposit and debt payments) into Hong Kong and US dollars in Macau.

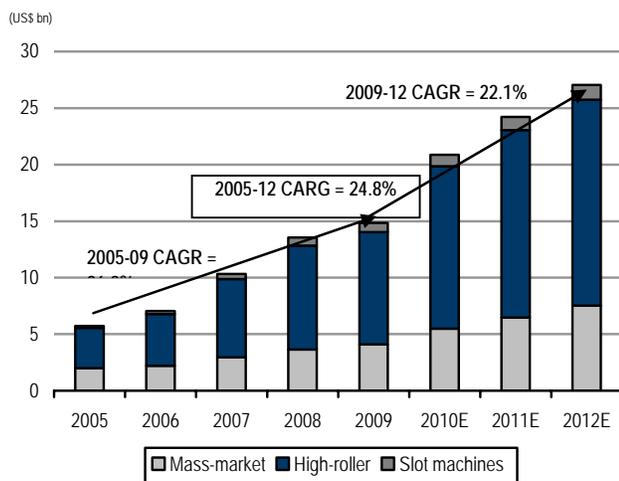
For working capital, our junket contacts told us that nowadays, their mainland Chinese customers are also their biggest investors. Some junkets offer a 10% return p.a. and 100% principal guarantee for their investment in the junket business. In our view, this highlights the sufficient excess liquidity and limited alternative choice of investment in Macau.

## Mass market benefits from rising salaries

For the mass market, which accounts for the remaining 30% of Macau's GGR, we believe this will continue to benefit from the rising salaries in China. Our study suggests a strong correlation between mass-market GGR and China's private consumption spending, albeit mass-market GGR showed even stronger growth and higher beta.

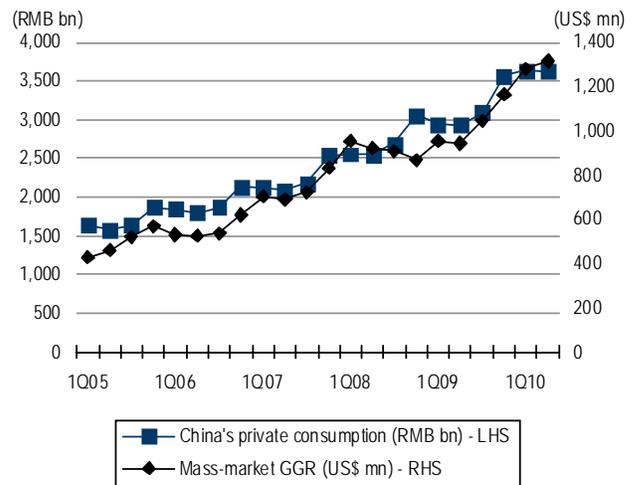
Analyst: Gabriel Chan

Figure 33: GGR projection



Source: DICJ, Credit Suisse estimates

Figure 34: Mass-market vs China's private consumption



Source: CEIC, DICJ

## Outlook remains positive, but stocks may see profit taking risk in the near term

We believe the strong income growth in China will continue to drive growth in the Macau gaming sector. However, we are more positive on the mass-market segment, which is dependent on domestic income growth and less affected by global liquidity fluctuations.

Nevertheless, with share pricing having outperformed MSCI China by 20-50% YTD, we see a risk of profit taking in the near term, despite gaming sector valuations remaining undemanding and trading on an average 11x FY11 EV/EBITDA, compared to a peak valuation of 15x.

Among the five listed Macau casino operators, we prefer Galaxy for having the most earnings upside risk.

# Property

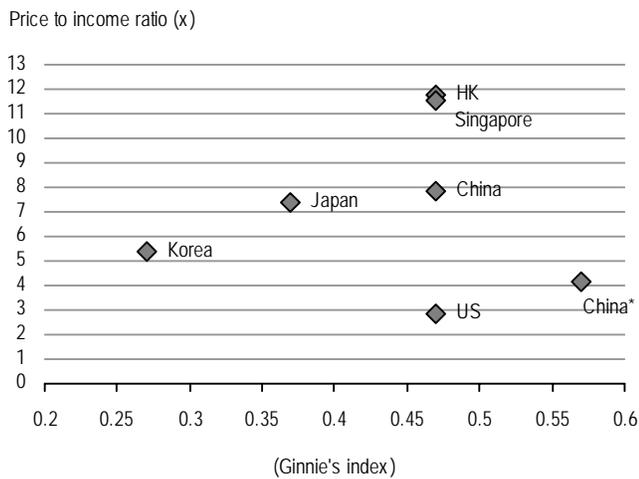
Analyst: Jinsong Du

The grey income data enables us to compare China's "real" housing affordability with other countries. We conclude that grey income improves housing affordability and helps explain the strong demand for housing despite surging property prices. However, due to the widening wealth gap, China should optimise its tax system – implementing property tax, for example – to further improve housing affordability, in our view.

Due to historical reasons, the methods to calculate affordability ratios differ from country to country. Nevertheless, the key difference has been using average income versus median income for the calculation.

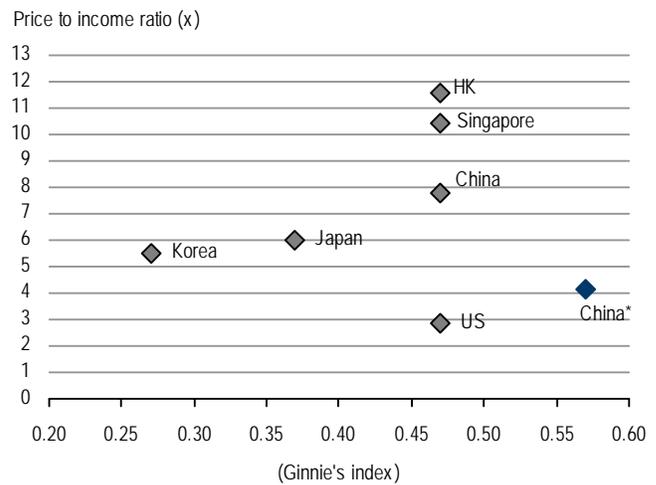
The figure below shows that, based on the official average urban income from China's National Statistics Bureau (NSB), China's current affordability ratio is 8x (that is, it takes eight years' average income to buy an average residential property unit) – lower than for city states, such as Singapore (probably not a relevant comparison), but significantly higher than for large and developed continental nations such as the US. However, if we consider the impact of the grey income, China's national affordability ratio drops to 4x – similar to that in the US.

**Figure 35: Gini index vs price-to-income ratio – based on average income**



\* = grey income used for calculation; Source: Government websites; Credit Suisse estimates

**Figure 36: Gini index vs price-to-income ratio – based on commonly used local methods**

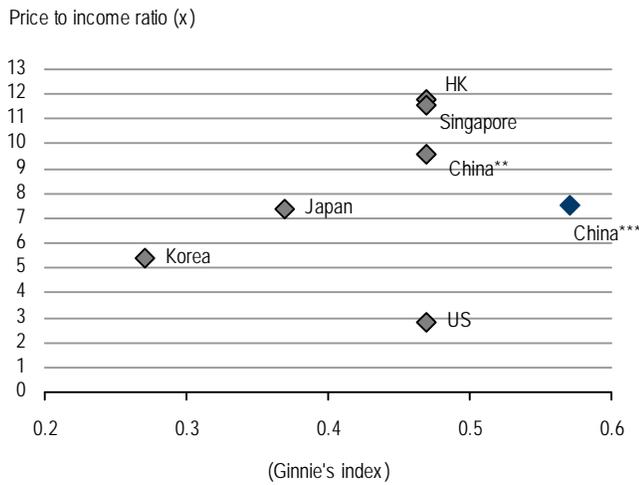


\* = grey income used for calculation; Source: Government websites; Credit Suisse estimates

However, the grey income data also imply that China's Gini index (the measurement for the wealth gap) may be much higher than that in the official data. Based on the official data, China's Gini index is between 0.45 and 0.5, roughly equal to the US but higher than other developed countries, such as Japan and in Europe. If the effect of grey income is included, China's Gini index is likely to be more than 0.55 – similar to many South American countries'.

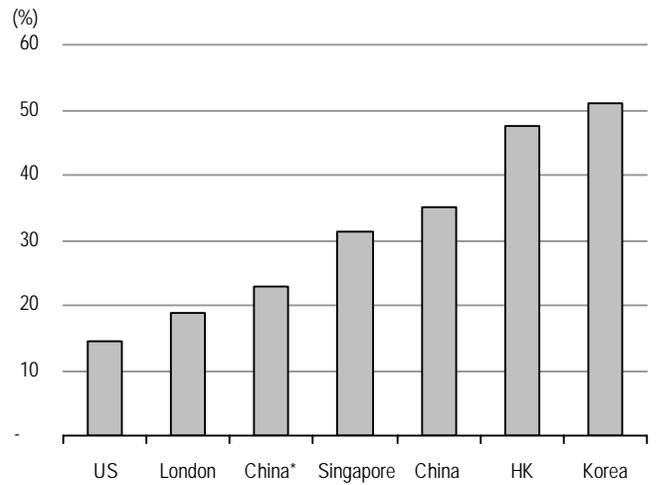
This raises the question over whether strong housing demand in China is mainly driven by self-use or investment by rich people. We think both are important drivers – as exemplified by the figure below. If we use median urban income instead of the average to calculate affordability, official income data results in an affordability ratio of 9.8x instead of 8x. The difference is even bigger when considering the effect of grey income – the affordability ratio, in this case, is 7.5x instead of 4x.

**Figure 37: Gini index vs price-to-income ratio (based on median income)**



Source: Government websites; Credit Suisse estimates; \*\* = median income used; \*\*\* = median grey income used for calculation

**Figure 38: Mortgage payment-to-income ratio**



Source: Government websites; Credit Suisse estimates; \* = grey income used for calculation

Therefore, in order to improve housing affordability, we believe China should not only raise wages, but optimise its tax system to narrow the wealth gap. For example, we expect the government to implement property tax, which should increase the holding costs for rich people's property investments.

Although these changes may happen only gradually, we believe they should change the dynamics of China's property market eventually. Those with relatively high turnover, or strong brandnames, or both, should stand to outperform those mainly dependent upon financial leverage and low land costs. China Vanke, COLI and KWG remain our top sector picks.

Europe / Germany  
 Automobile Manufacturers (Automobiles & Components) / MARKET WEIGHT

# BMW

(BMWG.F)

Rating	<b>OUTPERFORM*</b>
Price (05 Aug 10, Eu)	43.56
Target Price (Eu)	52.00 <sup>1</sup>
Market cap. (Eu mn)	28,497.82
Enterprise value (Eu mn)	48,088.5

\*Stock ratings are relative to the coverage universe in each analyst's or each team's respective sector.

<sup>1</sup>Target price is for 12 months.

**Research Analysts**

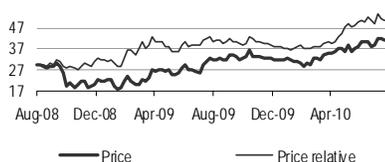
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## Luxury to drive – bargain to buy

- **104 mn “premium relevant” customers.** Chinese car customers are exceptionally brand conscious, leaving all four German premium brands (BMW, Mercedes, Audi, Porsche) in a unique position to penetrate the ever-increasing customer base. Based on household income projections, the number of premium relevant customers (i.e. with >US\$60,000 in annual income) will increase from 30 mn in 2010 to 104 mn in 2025.
- **Unit sales a matter of dealer roll-out.** BMW, in our view, has very limited exposure to the potentially overheating Chinese mass vehicle market. German premium vehicles sell in a different league, driven by Chinese customers’ massive enthusiasm for superior brands and with premium brands penetrating only 2% of the total Chinese vehicle market (2010E). We expect BMW to increase its unit sales in China from 90,256 in 2009 to 273,000 in 2015. This follows an expected increase in the number of dealers from 150 in 2009 to 390 in 2015 (which could turn out to be a very conservative estimate). BMW targets to increase its production capacity in China from 44,000 units in 2009 to 100,000 units in 2012.
- **From 6% to >20% of group earnings.** Based on our projections, BMW’s pre-tax profit contribution from China should increase from a meagre 7% in 2007 to more than 23% in 2015 (€1.5 bn pre-tax from China).
- **Bargain valuation.** BMW is trading on what we believe to be an exceptionally low valuation. It is potentially the “least expensive” way of gaining exposure to material luxury-end market exposure in China. Based on our numbers, BMW is trading on 2011/12E EV/sales of 0.23x/0.16x and EV/EBITDA of 1.7x/1.2x, respectively. We believe the market is not reflecting BMW’s earnings momentum and the fact that BMW has returned material cash (€6 bn) to its automotive division which was used by the captive Financial Services business during the past years’ economic crisis.

### Share price performance



The price relative chart measures performance against the Europe Dow Jones Stoxx index which closed at 268.61 on 30/07/10

On 30/07/10 the spot exchange rate was Eu .76 /US\$1

Performance Over	1M	3M	12M
Absolute (%)	3.0	11.4	29.1
Relative (%)	-3.1	14.7	20.7

### Financial and valuation metrics

Year	12/09A	12/10E	12/11E	12/12E
Revenue (Eu mn)	50,681.0	56,247.6	61,752.7	68,775.9
EBITDA (Eu mn)	289.00	3,483.20	4,863.41	5,881.90
Net Income (Eu mn)	-8,875.0	-6,022.6	-5,098.4	-4,500.3
CS adj. EPS (Eu)	-13.57	-9.21	-7.80	-6.88
Prev. EPS (Eu)	—	3.79	5.20	6.12
ROIC (%)	-12.24	-12.76	-9.46	-18.44
P/E (adj., x)	NM	NM	NM	NM
P/E rel. (%)	NM	NM	NM	NM
EV/EBITDA	283.9	13.8	9.9	3.4
Dividend (12/10E, Eu)	1.52	IC (12/10E, Eu mn)		10,534.0
Dividend yield (%)	3.7	EV/IC		4.6
Net debt (12/10E, Eu mn)	19,590.7	Current WACC		8.0
Net debt/equity (%) (12/10E,	67.1	Free float (%)		53.0
BV/share (12/10E, Eu)	44.6	Number of shares (mn)		653.83

Source: FTI, Company data, Thomson Reuters, Credit Suisse Securities (EUROPE) Ltd estimates

# China Overseas Land & Investment

(0688.HK / 688 HK)

Rating	<b>OUTPERFORM* [V]</b>
Price (05 Aug 10, HK\$)	16.49
Target price (HK\$)	17.70 <sup>1</sup>
Chg to TP (%)	7.3
Market cap. (HK\$ mn)	140,726 (US\$ 18,124)
Enterprise value (HK\$ mn)	131,263
Number of shares (mn)	8,172.26
Free float (%)	28.40
52-week price range	19.42 - 13.82

\*Stock ratings are relative to the relevant country benchmark.

<sup>1</sup>Target price is for 12 months.

[V] = Stock considered volatile (see Disclosure Appendix).

## Research Analysts

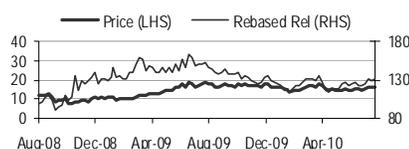
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## June contracted sales surged 75% MoM with ASP rising due to product mix

- June's sales surged 75% MoM.** COLI reported June contracted sales after the market's close on 12 July, with sales value up 75% MoM (0.8% YoY) to HK\$6 bn. Although a lack of launches dragged sale volumes (flat MoM; down 37% YoY), the 76% MoM surge in ASP led to COLI's outperformance in June contracted sales over most peers.
- Higher ASP due to product mix.** According to management, product mix change was the main reason for the higher ASP. For example, several loft (or service apartment) projects in key city centres were launched in June and recorded high unit prices.
- New launches due in 2H10.** For 2H10, COLI expects more new project launches (especially in the northern region), with reasonable pricing and a diversified product mix. We thus expect much higher sales volumes, but lower ASP in 2H10. For FY10, COLI maintains its guidance of 4.8 mn sq m in contracted sales volumes and a 10% plus YoY increase in ASP.
- 65% of 2010E sales target achieved.** Currently, 46% of COLI's guided volumes and 65% of our FY10E contracted sales value have already been achieved. We maintain our OUTPERFORM rating on COLI.

## Share price performance



The price relative chart measures performance against the MSCI China Free index which closed at 63.81 on 02/08/10. On 02/08/10 the spot exchange rate was HK\$7.75/US\$1

Performance Over	1M	3M	12M
Absolute (%)	16.7	12.0	-9.9
Relative (%)	7.9	11.4	-13.8

## Financial and valuation metrics

Year	12/08A	12/09E	12/10E	12/11E
Revenue (HK\$ mn)	18,892.4	37,321.6	39,919.1	49,247.4
EBITDA (HK\$ mn)	7,490.9	11,120.3	13,509.9	15,719.8
EBIT (HK\$ mn)	7,336.3	10,962.6	13,349.1	15,555.8
Net attributable profit (HK\$ mn)	3,631.9	6,513.9	7,673.6	8,949.3
EPS (CS adj.) (HK\$)	0.46	0.92	0.98	1.12
Change from previous EPS (%)	n.a.	0	0	0
Consensus EPS (HK\$)	n.a.	0.80	1.03	1.31
EPS growth (%)	-10.9	98.5	7.0	14.3
P/E (x)	37.3	18.8	17.6	15.4
Dividend yield (%)	0.8	1.2	1.6	1.9
EV/EBITDA (x)	16.7	11.8	8.3	6.4
ROE	17.0	17.3	17.1	17.7
Net debt/equity (%)	46.9	22.5	59.7	74.1
Current est. NAV (HK\$)	—	18.4	—	—
Disc./(prem.) to curr. NAV (%)	—	-6.6	—	—

Source: Company data, Thomson Reuters, Credit Suisse estimates

# China Mengniu Dairy

(2319.HK / 2319 HK)

Rating	<b>OUTPERFORM*</b>
Price (05 Aug 10, HK\$)	24.20
Target price (HK\$)	28.50 <sup>1</sup>
Chg to TP (%)	17.7
Market cap. (HK\$ mn)	42,649 (US\$ 5,493)
Enterprise value (Rmb mn)	30,931
Number of shares (mn)	1,737.22
Free float (%)	63.47
52-week price range	28.80 - 18.10

\*Stock ratings are relative to the relevant country benchmark.  
<sup>1</sup>Target price is for 12 months.

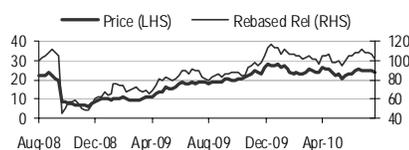
## Research Analysts

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## Product upgrade to offset raw milk price hikes

- China's largest liquid milk producer.** Mengniu is the largest liquid milk producer in China, with a market share of nearly 40%. After the melamine incident, Mengniu adjusted its strategy with more product focus on high value-added products, including yogurt, yogurt drinks, flavoured milk beverage, and children's milk products. Mengniu's strategic investment in modern ranches is also expected to support its high-end product strategy and reduce food safety risks.
- Raw milk price on the rise.** Mengniu's raw milk price increased 6.35% YTD, slightly lower than the national average of 7.3%. We assume a 5% HoH increase in 2H10. We expect Mengniu's new product launch and product mix upgrade to drive margin expansion gradually. We forecast a gross margin of 26.8-27% for 2010-12E. If Mengniu delivers its guidance of 28% in 2011, there would be 17% potential upside from our base-case earnings forecast.
- Three market concerns gradually removed.** 1) Old share placement (after the placement on 28 July, Jinniu and Yinniu own only a 4.99% interest, implying limited interest in a further reduction); 2) New stock options (Mengniu clearly guided that it will not grant new share options unless there is a significant change in senior management, resulting in better earnings visibility and quality); and 3) SOE background (we expect COFCO to add value when Mengniu is strategically expanding into farming and reduce the price transfer risk caused by potential connected transactions).
- Top pick in China consumer staple universe.** Our 12-month target price of HK\$28.5 is based on a 28x forward P/E, matching Mengniu's 27.2% three-year earnings CAGR. We expect 1H10 results (due on 31 August) to be the next catalyst for share price performance. We are looking for net earnings of Rmb650 mn (negative 11.2% YoY, but 43.2% HoH), on sales growth of 21% YoY. We expect stronger 2H10 earnings growth (63% YoY and 14% HoH).

## Share price performance



The price relative chart measures performance against the MSCI China Free index which closed at 63.81 on 02/08/10. On 02/08/10 the spot exchange rate was HK\$7.76/US\$1.

Performance Over	1M	3M	12M
Absolute (%)	-1.8	3.8	32.3
Relative (%)	-9.1	3.3	26.6

## Financial and valuation metrics

Year	12/09A	12/10E	12/11E	12/12E
Revenue (Rmb mn)	25,710.5	31,093.2	37,289.9	44,336.4
EBITDA (Rmb mn)	2,343.4	2,760.2	3,324.8	3,985.1
EBIT (Rmb mn)	1,668.0	2,145.2	2,617.3	3,194.4
Net income (Rmb mn)	1,185.8	1,387.7	1,905.1	2,442.5
EPS (CS adj.) (Rmb)	0.68	0.78	1.04	1.30
Change from previous EPS (%)	n.a.	0	0	0
Consensus EPS (Rmb)	n.a.	0.79	0.98	1.13
EPS growth (%)	6.6	14.3	32.8	25.8
P/E (x)	31.4	27.5	20.7	16.4
Dividend yield (%)	0.7	0.7	1.5	2.0
EV/EBITDA (x)	13.6	11.2	9.0	7.1
P/B (x)	4.3	3.8	3.4	2.9
ROE	12.5	13.7	16.3	18.0
Net debt/equity (%)	net cash	net cash	net cash	net cash

Source: Company data, Thomson Reuters, Credit Suisse estimates.

# China Vanke Co Ltd – A

(000002.SZ / 000002 CH)

Rating	<b>OUTPERFORM* [V]</b>
Price (05 Aug 10, Rmb)	7.99
Target price (Rmb)	9.50 <sup>1</sup>
Chg to TP (%)	18.8
Market cap. (Rmb mn)	80,540 (US\$ 11,889)
Enterprise value (Rmb mn)	89,463
Number of shares (mn)	9,680.26
Free float (%)	85.27
52-week price range	13.31 - 6.68

\*Stock ratings are relative to the relevant country benchmark.

<sup>1</sup>Target price is for 12 months.

[V] = Stock considered volatile (see Disclosure Appendix).

## Research Analysts

**Jinsong Du**

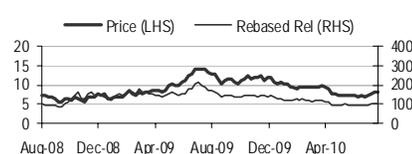
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## Stellar June contracted sales and set to benefit from wait-and-see attitude

- **June's sales exceeded market expectations.** China's largest homebuilder China Vanke's June contracted sales far exceeded market expectations. This confirms our view that Vanke should outperform peers in contracted sales during the current market uncertainty, due to its more flexible pricing and stronger brand name. June's contracted sales of Rmb8.77 bn imply 72% MoM and 28% YoY growth.
- **63% of 2010E sales target achieved.** This strong result was achieved with only a 6% MoM decline in ASP, a clear indicator that housing demand remains strong. Vanke's diversified geographical reach and exposure to smaller cities also helped, we believe. Vanke has already achieved 63% of Credit Suisse's estimate for 2010E contracted sales – one of the best in the sector.
- **High asset turn players should win.** We believe the sector's current stand-off and wait-and-see attitude among developers, home buyers and policy makers may last longer than expected and Vanke should continue to sell much better than most peers in this scenario. Home buyers are waiting for developers to reduce prices; developers are waiting for the release of pending government policies; and the government is waiting for more clarity on market conditions before announcing more policies. Therefore, the government may hold back from announcing more policies, but the overhang and cash flow pressure may cause gradual property price falls, triggering a lukewarm rebound in housing transaction volumes. In this scenario, developers with greater flexible pricing and faster asset turns stand to win. And Vanke fits the bill.
- **Trading at 34% discount to 12-month NAV.** With an attractive valuation of a 34% discount to end-2010E NAV (versus the historical average of 9% premium), Vanke remains one of our top picks in the China property sector.

## Share price performance



The price relative chart measures performance against the MSCI China Free index which closed at 63.81 on 02/08/10. On 02/08/10 the spot exchange rate was Rmb6.83/US\$1

Performance Over	1M	3M	12M
Absolute (%)	20.1	6.7	-37.7
Relative (%)	11.1	6.1	-40.4

## Financial and valuation metrics

Year	12/08A	12/09E	12/10E	12/11E
Revenue (Rmb mn)	40,991.8	48,881.0	52,145.2	57,947.1
EBITDA (Rmb mn)	7,002.8	9,256.3	12,157.8	12,981.0
EBIT (Rmb mn)	6,954.7	9,224.9	12,124.7	12,946.3
Net attributable profit (Rmb mn)	4,033.2	5,329.8	7,178.9	7,354.4
EPS (CS adj.) (Rmb)	0.37	0.48	0.65	0.67
Change from previous EPS (%)	n.a.	0	0	0
Consensus EPS (Rmb)	n.a.	0.48	0.66	0.78
EPS growth (%)	-20.0	32.2	34.7	2.4
P/E (x)	22.7	17.2	12.7	12.4
Dividend yield (%)	0.6	—	1.1	1.4
EV/EBITDA (x)	13.3	9.7	7.9	7.3
ROE	12.6	14.3	16.4	14.9
Net debt/equity (%)	40.2	23.9	34.6	28.8
Current est. NAV (Rmb)	—	9.4	—	—
Disc./(prem.) to curr. NAV (%)	—	-11.7	—	—

Source: Company data, Thomson Reuters, Credit Suisse estimates

# Galaxy Entertainment Group Ltd

(0027.HK / 27 HK)

Rating	<b>OUTPERFORM*</b> [V]
Price (05 Aug 10, HK\$)	5.36
Target price (HK\$)	5.45 <sup>1</sup>
Chg to TP (%)	1.7
Market cap. (HK\$ mn)	21,333 (US\$ 2,747)
Enterprise value (HK\$ mn)	27,065
Number of shares (mn)	3,943.26
Free float (%)	26.20
52-week price range	5.41 - 2.00

\*Stock ratings are relative to the relevant country benchmark.

<sup>1</sup>Target price is for 12 months.

[V] = Stock considered volatile (see Disclosure Appendix).

## Research Analysts

**Gabriel Chan, CFA**

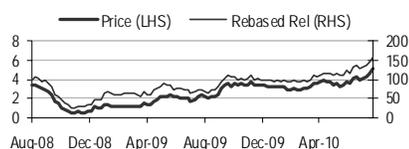
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## Top pick given highest earnings upside risk

- Our top pick in the Macau gaming sector.** Galaxy is our top pick in the Macau gaming sector due to its highest earnings upside risk, as we believe the market has substantially underestimated the earnings potential from its upcoming new opening, Galaxy Macau in Cotai.
- Market has underestimated the earnings potential of Galaxy Macau.** In our view, the market has substantially underestimated the earnings potential of Galaxy's next opening, Galaxy Macau, in Cotai, which is scheduled to start operations in 1Q11. The I/B/E/S consensus FY11 EBITDA forecast for Galaxy is HK\$2,448 mn. Based on Galaxy's 1Q10 results announcement of flagship casino, StarWorld, on an annualised basis, it is already expected to have generated HK\$1,476 mn in FY10. At the group consolidated level, having included contributions from its City Clubs and construction material business, Galaxy is expected to generate total EBITDA of HK\$1,668 mn.
- First mainland Chinese-focused casino in Cotai.** Being the first mainland Chinese market-focused low-price-point property in Cotai, we believe Galaxy Macau should be able to help the casino operator to gain market share. Despite having about 25% of gaming table capacity and 44% of five-star hotel room capacity in Macau, Cotai only captured 22% of gaming revenue in 1Q10. In our view, this is partly due to its relatively less convenient location, as over 50% of visitors to Macau are daytrippers who may prefer casinos closer to the immigration check point. On the other hand, even for players who intend to stay overnight, some may still prefer to stay at hotels that offer lower room rates.
- The only listed casino operator with the greatest potential for a rerating.** Among the listed Macau casino operators, Galaxy is the only one that has registered a meaningful rerating YTD (from 7.8x to 10.6x FY10 EV/EBITDA). We expect a further rerating to come when confidence in its new opening gradually improves. Our target price is set at HK\$5.45, based on 10x FY11E EV/EBITDA.

## Share price performance



The price relative chart measures performance against the HANG SENG index which closed at 21412.79 on 02/08/10. On 02/08/10 the spot exchange rate was HK\$7.76/US\$1

Performance Over	1M	3M	12M
Absolute (%)	37.0	46.2	129.2
Relative (%)	27.3	44.1	120.3

## Financial and valuation metrics

Year	12/09A	12/10E	12/11E	12/12E
Revenue (HK\$ mn)	12,232.7	17,370.0	18,788.9	19,831.1
EBITDA (HK\$ mn)	1,041.4	1,750.1	3,129.3	4,271.2
EBIT (HK\$ mn)	377.3	906.8	2,094.9	3,115.2
Net income (HK\$ mn)	1,149.1	680.7	1,429.7	2,655.7
EPS (CS adj.) (HK\$)	0.29	0.17	0.36	0.67
Change from previous EPS (%)	n.a.	0	0	0
Consensus EPS (HK\$)	n.a.	0.11	0.19	0.31
EPS growth (%)	n.a.	-40.8	110.1	85.7
P/E (x)	18.5	31.3	14.9	8.0
Dividend yield (%)	—	—	—	—
EV/EBITDA (x)	22.5	15.5	9.6	6.3
P/B (x)	2.9	2.6	2.2	1.8
ROE	15.1	8.2	14.6	21.3
Net debt/equity (%)	27.2	68.9	89.3	43.8

Source: Company data, Thomson Reuters, Credit Suisse estimates

# Hang Lung Properties

(0101.HK / 101 HK)

Rating	<b>NEUTRAL*</b> [V]
Price (05 Aug 10, HK\$)	33.70
Target price (HK\$)	29.84 <sup>1</sup>
Chg to TP (%)	-11.5
Market cap. (HK\$ mn)	137,203 (US\$ 17,670)
Enterprise value (HK\$ mn)	133,394
Number of shares (mn)	4,145.10
Free float (%)	43.00
52-week price range	33.65 - 24.15

\*Stock ratings are relative to the relevant country benchmark.

<sup>1</sup>Target price is for 12 months.

[V] = Stock considered volatile (see Disclosure Appendix).

## Research Analysts

Cusson Leung, CFA

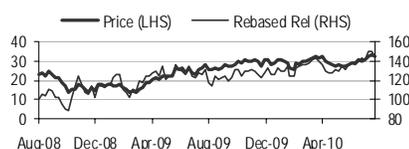
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## A proxy for high-end consumption in China

- The most defensive China property play.** Hang Lung Props is the only Hong Kong property company not to have entered residential property development in China. Its focus on commercial properties, particularly retail shopping malls, makes the company defensive. In Hong Kong, the company is not an active player in the property development space although it still has inventories to sell at The Harbourside and Long Beach together with a property development in Blue Pool road.
- A proxy for China's high-end consumption.** Plaza 66 in Shanghai, which houses the flagship stores of Prada, Louis Vuitton, Cartier, Giorgio Armani etc, has always enjoyed 100% occupancy, with a lengthy waiting list. The rent rose from HK\$77/sq ft/month in 2004, to HK\$235/sq ft/month at the end of 2009. The Louis Vuitton store has expanded multiple times, since its opening in 2001 there.
- More luxurious shopping malls under construction.** Palace 66 in Shenyang opened on 26 June 2010, which is fully let and has attracted market attention. It houses luxury brands such as Cartier, Omega, S.T.Dupont, etc. In the coming five years, the company expects five more prime shopping malls to be completed. The five cities where these five shopping mall projects are located, all exhibit strong retail sales growth (20-25% in 2008).
- Valuation.** The company is trading at a 3% discount to its NAV. This is not considered to be inexpensive among the major landlords. Despite the company's focus on China, we believe the current valuation does not provide much potential upside and we maintain our NEUTRAL rating. Our target price of HK\$29.84 is based on a 10% discount to NAV.

### Share price performance



The price relative chart measures performance against the HANG SENG index which closed at 21412.79 on 02/08/10. On 02/08/10 the spot exchange rate was HK\$7.79/US\$1

Performance Over	1M	3M	12M
Absolute (%)	9.6	16.1	16.5
Relative (%)	1.9	14.5	12.0

### Financial and valuation metrics

Year	6/09A	6/10E	6/11E	6/12E
Revenue (HK\$ mn)	4,172.6	8,524.2	10,975.2	11,028.5
EBITDA (HK\$ mn)	3,191.4	8,867.3	10,085.1	10,185.8
EBIT (HK\$ mn)	3,178.7	8,859.3	10,077.1	10,177.8
Net attributable profit (HK\$ mn)	2,388.3	6,998.0	7,981.4	8,041.0
EPS (CS adj.) (HK\$)	0.58	1.69	1.93	1.94
Change from previous EPS (%)	n.a.	0	0	0
Consensus EPS (HK\$)	n.a.	1.66	1.56	1.63
EPS growth (%)	-53.4	193.0	14.1	0.7
P/E (x)	57.4	19.6	17.2	17.1
Dividend yield (%)	2.0	2.1	2.0	2.0
EV/EBITDA (x)	41.2	15.0	13.2	13.2
ROE	3.6	10.0	10.7	10.1
Net debt/equity (%)	net cash	net cash	net cash	net cash
Current est. NAV (HK\$)	—	33.6	—	—
Disc./ (prem.) to curr. NAV (%)	—	-1.3	—	—

Source: Company data, Thomson Reuters, Credit Suisse estimates.

# KWG Property Holding Ltd (1813.HK /

1813 HK)

Rating	<b>OUTPERFORM* [V]</b>
Price (05 Aug 10, HK\$)	5.63
Target price (HK\$)	5.3 <sup>1</sup>
Chg to TP (%)	1.2
Market cap. (HK\$ mn)	16,867 (US\$ 2,172)
Enterprise value (Rmb mn)	19,751
Number of shares (mn)	2,893.15
Free float (%)	30.00
52-week price range	6.99 - 3.89

\*Stock ratings are relative to the relevant country benchmark.

<sup>1</sup>Target price is for 12 months.

[V] = Stock considered volatile (see Disclosure Appendix).

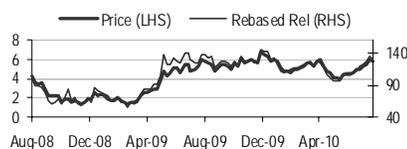
## Research Analysts

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## 25% MoM drop for June presales on lack of new launches, but 71% of CS 2010E target met

- 71% of 2010E sales target achieved.** KWG recorded June pre-sales of Rmb600 mn, declining 25% MoM and 27% YoY, primarily due to a lack of new project launches. As KWG is relatively small, one or two launches are big enough to cause a major change in monthly presales. Nevertheless, KWG still recorded Rmb6.5 bn in presales for 1H10 – 71% of Credit Suisse’s estimate and 65% of company guidance – and much better than most of its peers. Despite the lack of new projects, KWG’s existing projects continued to do well, with Chengdu Cosmos maintaining its ASP of Rmb21,000 per sq m – the highest in Chengdu.
- New launches in 2H10 should serve as potential catalysts.** KWG plans to launch several new projects within 3Q10, including Suzhou Apex, Guangzhou Summit Phase 2, and additional phases for Chengdu Cosmos, Suzhou Sapphire and Guangzhou International Creative Valley. We believe these new projects could potentially serve as catalysts, should sales continue to do well in the next coming months.
- Strong product differentiation places KWG at an advantage position.** We believe KWG’s ability to maintain its premium pricing with a comfortable sell-through rate amid market weakness, again proved its product differentiation and execution capabilities.
- Trading at 60% discount to 12-month NAV.** KWG trades at a 60% discount to its end-2010E NAV and 8.6x 10E P/E. We maintain our OUTPERFORM rating.

### Share price performance



The price relative chart measures performance against the MSCI China Free index which closed at 63.81 on 02/08/10. On 02/08/10 the spot exchange rate was HK\$7.75/US\$1.

Performance Over	1M	3M	12M
Absolute (%)	17.5	26.7	-1.4
Relative (%)	8.8	26.1	-5.6

### Financial and valuation metrics

Year	12/08A	12/09E	12/10E	12/11E
Revenue (Rmb mn)	1,574.2	4,266.6	8,298.4	9,896.4
EBITDA (Rmb mn)	712.6	1,261.1	2,634.3	3,174.8
EBIT (Rmb mn)	703.3	1,250.9	2,623.1	3,162.5
Net attributable profit (Rmb mn)	392.1	729.6	1,315.7	1,515.0
EPS (CS adj.) (Rmb)	0.15	0.27	0.45	0.52
Change from previous EPS (%)	n.a.	0	0	0
Consensus EPS (Rmb)	n.a.	0.26	0.43	0.56
EPS growth (%)	-65.1	76.5	70.4	15.2
P/E (x)	33.6	19.1	11.2	9.7
Dividend yield (%)	0.6	1.0	1.7	1.9
EV/EBITDA (x)	27.1	15.7	8.7	6.9
ROE	4.6	7.7	12.0	12.4
Net debt/equity (%)	54.6	48.4	70.2	56.8
Current est. NAV (Rmb)	—	10.2	—	—
Disc./(prem.) to curr. NAV (%)	—	-50.2	—	—

Source: Company data, Thomson Reuters, Credit Suisse estimates

# LVMH

(LVMH.PA)

Rating	<b>NEUTRAL*</b>
Price (5 Aug 10, Eu)	95.17
Target Price (Eu)	93.00 <sup>1</sup>
Market cap. (Eu mn)	45,873.80
Enterprise value (Eu mn)	53,539.2

\*Stock ratings are relative to the coverage universe in each analyst's or each team's respective sector.

<sup>1</sup>Target price is for 12 months.

**Research Analysts**

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## First reference for emerging luxury shoppers

- **Why we think LVMH is a great play on the Chinese consumer.** Louis Vuitton and Hennessy remain the first reference for emerging Chinese luxury consumers in their respective categories and LVMH benefits from their early presence in the country (e.g. the first Hennessy order in 1859, the first Louis Vuitton store opened in 1992) and consistent investment throughout the years., which translates into: 1) market leadership, 2) strong local management, 3) the ability to seize the best locations and capture attractive rents (for LV) and 4) attractive profitability. Other key brands within the LVMH portfolio in China include Dior (which enjoys a strong competitive position in perfumes and cosmetics) and Sephora (which has rapidly expanded its store network in recent years).
- **China exposure and plans.** In luxury goods, it makes sense to think about Greater China since a significant portion of Chinese luxury shopping takes place in Hong Kong and Macau. Greater China accounted for about 12% of LVMH group sales in 2009. But for the group's main profit engine – Louis Vuitton – China clientele already account for about 18% of LV global sales, the second-largest after the Japanese. LVMH does not have explicit medium-term expansion targets, but China remains a priority for the group in terms of store network investment (with a special focus on tier-2 cities).
- **Investment case: an attractive long-term story, but limited ST upside.** Louis Vuitton's strong competitive position, ownership of leading brands with global scalability and attractive exposure to emerging markets (about a third of group sales) are the main reasons we like the stock in the long run. But after its recent run, a lot of good news seems to be priced in, as its relative P/E to the market sits near all-time highs at times when macro leading indicators are suggesting a growth slowdown.
- **Catalysts.** 3Q sales in October, EUR/USD and EUR/JPY movements.
- **Valuation.** LVMH trades at a modest premium to peers at 17.4x 2011 P/E.

### Share price performance



The price relative chart measures performance against the Europe Dow Jones Stoxx index which closed at 268.61 on 30/07/10

On 30/07/10 the spot exchange rate was Eu .76 /US\$1

Performance Over	1M	3M	12M
Absolute (%)	4.2	7.8	46.3
Relative (%)	-1.8	11.0	36.7

### Financial and valuation metrics

Year	12/09A	12/10E	12/11E	12/12E
Revenue (Eu mn)	17,053.0	18,935.9	20,498.2	22,041.0
EBITDA (Eu mn)	3,862.00	4,494.91	4,940.15	5,385.43
Net Income (Eu mn)	1,888.5	2,133.4	2,411.6	2,693.0
CS adj. EPS (Eu)	3.98	4.49	5.08	5.67
Prev. EPS (Eu)	—	—	—	—
ROIC (%)	10.68	12.09	12.72	13.31
P/E (adj., x)	23.54	20.84	18.43	16.51
P/E rel. (%)	146.5	170.6	182.9	183.2
EV/EBITDA	14.0	11.9	10.7	9.7
Dividend (12/10E, Eu)	1.90	IC (12/10E, Eu mn)		21,552.4
Dividend yield (%)	2.0	EV/IC		2.5
Net debt (12/10E, Eu mn)	2,641.5	Current WACC		8.7
Net debt/equity (%) (12/10E,	18.3	Free float (%)		48.6
BV/share (12/10E, Eu)	31.9	Number of shares (mn)		490.00

Source: FTI, Company data, Thomson Reuters, Credit Suisse Securities (EUROPE) Ltd estimates

# Swatch Group

(UHR.VX)

Rating	<b>OUTPERFORM*</b>
Price (5 Aug 10, SFr)	341.40
Target Price (SFr)	375.00 <sup>1</sup>
Market cap. (SFr m)	16,912.06
Enterprise value (SFr m)	15,083.7

\*Stock ratings are relative to the coverage universe in each analyst's or each team's respective sector.

<sup>1</sup>Target price is for 12 months.

**Research Analysts**

**Patrick Jnglin, CFA**

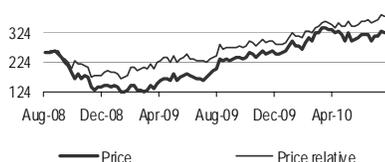
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## Strong positioning in China

- **Main investment thesis.** We regard the Swatch Group as one of the best positioned players structurally and geographically in the luxury sector. This is mainly due to the company's strong diversification of 19 watch brands across different price categories and its low exposure to the US and Japanese markets (i.e. about 18% of sales).
- **Attractive China exposure.** With regard to China, the Swatch Group is among the best-positioned companies to capture Chinese spending at an early stage in the development of personal disposable wealth in China, in our view, as: 1) it has established brand awareness, especially with Omega over 110 years, providing it with a considerable competitive advantage; and 2) the offer of luxury products at lower price points compared with say, the high luxury businesses of some of its peers. We estimate that today the group's China exposure accounts for about 27% of group sales. We expect the company to further expand its retail presence either directly through its own stores, or through Xinhua Hengdeli, the largest luxury goods retailer and wholesaler in China, which recently announced plans to further develop its retail business by raising its market presence in second and third-tier cities.
- **Catalysts.** Swatch Group's 1H10 figures are expected to be published on 18 August 2010. On the back of the recent publication of Swiss watch export figures, which showed a strong increase of Swiss watch exports in 1H10 (i.e. up 19.7% in 1H10) we expect the Swatch Group to report a strong improvement in its results (sales: +16%; EBIT +52.5%; net income +34% versus the previous year). As a result, we expect Swatch Group to be on track to achieve record results in 2010.
- **Valuation.** Based on our DCF valuation approach, we derive a fair value of SFr375 per share. At such a valuation, the Swatch Group would trade at a P/E 2010E of 17x, which we regard as justified, given the high-quality growth profile of Swatch Group, its strong track record and leading market position in the watch industry.

### Share price performance



The price relative chart measures performance against the Switzerland SMI index which closed at 6321.64 on 30/07/10. On 30/07/10 the spot exchange rate was SFr1.37/Eu 1. - Eu .76/US\$1

Performance Over	1M	3M	12M
Absolute (%)	5.3	1.5	62.7
Relative (%)	4.0	8.3	55.6

### Financial and valuation metrics

Year	12/09A	12/10E	12/11E	12/12E
Revenue (SFr mn)	5,142.1	5,544.1	6,078.6	6,666.6
EBITDA (SFr mn)	1,123.00	1,411.27	1,674.55	1,882.31
Net Income (SFr mn)	759.0	1,004.9	1,221.4	1,396.6
CS adj. EPS (SFr)	14.02	18.56	22.56	25.79
Prev. EPS (SFr)	—	—	—	—
ROIC (%)	13.64	17.55	20.51	22.42
P/E (adj., x)	23.01	17.38	14.30	12.51
P/E rel. (%)	163.8	138.4	125.0	116.5
EV/EBITDA	14.1	10.7	8.5	7.1
Dividend (12/10E, SFr)	5.30	IC (12/10E, SFr mn)	5,381.2	
Dividend yield (%)	1.6	EV/IC	2.8	
Net debt (12/10E, SFr mn)	-1,828.4	Current WACC	9.0	
Net debt/equity (%) (12/10E,	-27.0	Free float (%)	76.0	
BV/share (12/10E, SFr)	124.9	Number of shares (mn)	52.42	

Source: FTI, Company data, Thomson Reuters, Credit Suisse Securities (EUROPE) Ltd estimates

# Compagnie Financiere Richemont SA (CFR.VX)

Rating	<b>OUTPERFORM* [V]</b>
Price (5 Aug 10, SFr)	42.01
Target Price (SFr)	45.00 <sup>1</sup>
Market cap. (Eu mn)	17,172.64
Enterprise value (Eu mn)	15,295.8

\*Stock ratings are relative to the coverage universe in each analyst's or each team's respective sector.

<sup>1</sup>Target price is for 12 months.

[V] = Stock considered volatile (see Disclosure Appendix).

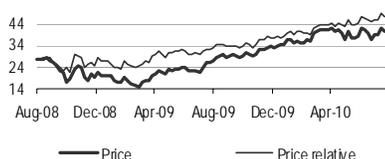
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## Chinese: already the group's biggest clientele

- **Why we think Richemont is a great play on the Chinese consumer.** Cartier remains the leading jewellery brand globally and has a strong competitive position in Greater China (44 stores in March 2010). Richemont arguably owns the strongest hard luxury brand portfolio in the sector and is particularly well positioned in China, where price points above the global average play very nicely to Richemont's strengths (skewed to the top of the luxury pyramid).
- **China exposure and plans.** In luxury goods, it makes sense to think about Greater China since a significant portion of Chinese luxury shopping takes place in Hong Kong and Macau. Greater China accounted for about 22% of group sales in FY10 and Chinese clientele are becoming increasingly more relevant in European tourist cities. China remains a global priority in terms of retail network investment. Its retail network in Greater China at the end of March 2010 comprised 389 stores, 300 in Mainland China. Dunhill, Montblanc, Cartier, Chloe, Piaget, Shanghai Tang are among Richemont's key brands in China.
- **Investment case.** In the medium term, Richemont owns arguably the best hard luxury brand portfolio with global scalability, superior exposure to emerging market clientele (>50% of sales), untapped margin potential from rising retail exposure and high operating gearing and value optionality from a big net cash pile (€1.9 bn as of March 2010). In the short term, the stock is supported by a weaker euro which is likely to boost luxury spending in Europe, a depressed comparison base through to September, a boost from wholesale replenishment and the growth outlook in Asia ex. Japan (which should drive about 60% of its growth in coming years, on our estimates) remaining good.
- **Catalysts.** Swiss watch exports on 19 August and AGM trading update on 8 September.
- **Valuation:** Richemont trades at 19x calendar 2011 P/E.

### Share price performance



The price relative chart measures performance against the Switzerland SMI index which closed at 6321.64 on 30/07/10. On 30/07/10 the spot exchange rate was SFr1.37/Eu 1. - Eu .76/US\$1

Performance Over	1M	3M	12M
Absolute (%)	7.1	2.0	52.2
Relative (%)	5.9	8.9	45.7

### Financial and valuation metrics

Year	03/10A	03/11E	03/12E	03/13E
Revenue (Eu mn)	5,176.0	5,929.5	6,366.3	6,882.8
EBITDA (Eu mn)	1,063.00	1,319.39	1,473.69	1,648.01
Net Income (Eu mn)	599.0	886.3	1,021.1	1,152.7
CS adj. EPS (Eu)	1.08	1.58	1.83	2.06
Prev. EPS (Eu)	—	—	—	—
ROIC (%)	17.73	21.39	21.36	22.59
P/E (adj., x)	27.80	18.88	16.38	14.51
P/E rel. (%)	203.7	154.0	145.5	—
EV/EBITDA	14.4	11.6	10.2	8.8
Dividend (03/11E, SFr)	0.83	IC (03/11E, Eu mn)		4,100.7
Dividend yield (%)	2.1	EV/IC		3.7
Net debt (03/11E, Eu mn)	-1,876.8	Current WACC		8.8
Net debt/equity (%) (03/11E,	-29.3	Free float (%)		90.9
BV/share (03/11E, Eu)	11.7	Number of shares (mn)		574.20

Source: FTI, Company data, Thomson Reuters, Credit Suisse Securities (EUROPE) Ltd estimates



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