

COMPARABLE HOUSEHOLD SAVING RATES FOR CHINA AND THE UNITED STATES

BY XIAO QIN AND RUOEN REN*

Beihang University

This paper focuses on how the household saving rate should be measured. The current method used in China to measure the saving rate is compared with that used in the U.S. Significant differences in concept and scope are discovered. Using these differences as a basis, we make relevant adjustments to the official measurement and recalculate the household saving rates of the two countries on a comparative scale. Our results show that the average of the Chinese household saving rate during the 1992–2004 period falls from 29.4 to 22.9 percent, and is lower than 20 percent in 2000, 2001, and 2003. The gap between China's household saving rate and that of the U.S. narrows by 8.6 percent on average and the adjusted difference is merely 17.5 percent on a comparable scale. It is therefore reasonable to conclude that the difference between the household saving rates of these two countries is in fact much smaller than is often suggested. Our study also shows that the household saving rates of these two countries are experiencing the same decreasing trend, but that both have increased slightly since 2002.

1. INTRODUCTION

In recent years, household saving in the People's Republic of China has attracted the world's attention for several reasons. First, most growth models regard saving as a stimulus to economic growth. In this context, saving in China has been viewed as a critical factor for her continuously high growth over the past 15 years, because it could fund a continuous flow of capital for industrialization and development. Second, saving is the major source for the funding of China's social security system, which is a crucial factor for China's sustainable development in the future. For example, the proportion of household savings made as the result of the motivation to retain funds for the retirement years averaged as high as 12.4 percent in 2000.¹ However, Feldstein (1974) argues that social security has an effect on personal savings in two ways: it offers both a substitute for assets and an inducement to retire. The net effect of social security on personal saving depends on the two effects combined. His empirical study shows that social security in the U.S. depressed personal savings by 30–50 percent from 1929 to 1971. The same effect can be expected for household savings, as it equals personal savings deducted by a fairly small part, i.e. the savings of Non-Profit Institutions Serving Households (more details are provided later).² Then, a similar question for the case of China is whether the improvement of its social security system will also

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*Correspondence to: Ruoen Ren, School of Economics and Management, Beihang University, 37 Xue Yuan Road, Beijing 100191, P. R. China (ruoen8324@vip.sina.com).

¹See Wei (2002, table 6-3, p. 136).

²Unless otherwise specified, in the following sections, the term "saving" refers to household saving.

depress household savings to some extent. Third, the high rate of saving in China is related closely to discussions on the issue of global imbalances, because the official saving rate is much greater than that in most of the developed countries, particularly the U.S., which has an exceptionally low saving rate. Fehr *et al.* (2005) even argue that, largely due to this imbalance in saving, “there is good reason to believe that China is in the process of taking us (the world) to dinner by slowly but surely becoming the world’s biggest saver and the developed world’s major supplier of capital” (p. 41).

It is a commonly held view among scholars that China has an extraordinarily high saving rate. In 1999, one of the official figures showed that the domestic saving rate of China reached 42 percent, while the saving rate of the U.S. was only 16 percent.³ The huge gap between the two figures has convinced many scholars that the saving behavior of mainland Chinese is exceptional. As a result, scholars from both China and other countries have investigated saving behavior, e.g. Zang (1994), Sun (2002), and Modigliani and Cao (2004). We agree that there might be some difference between the saving behavior of mainland Chinese and people in other countries, given that China has been at an early stage of economic development and has a unique culture and social background. However, it first needs to be determined whether the official figures for the currently high saving rate of China are comparable internationally, i.e. whether the astonishingly huge gap between the saving rate of China and that of other countries, e.g. the U.S., is real or is due only to some conceptual differences and/or inconsistencies in measurement. Therefore, the main purpose of this paper is to compare the prevalent saving measures in China and the U.S. and to derive the comparative saving rates.

In the past ten years, the measurement of savings and the saving rate has become the subject of intensive research among national accountants and scholars worldwide. Gale and Sabelhaus (1999) pointed out that the continuously decreasing saving rate of the U.S. in the 1990s was due largely to problems of measurement. In 2002, the 27th General Conference of the International Association for Research in Income and Wealth (IARIW) and one of the Meetings of the OECD National Accounts Experts (NAEM) each held a session on measuring savings and the saving rate. Reinsdorf and Yan (2002) proposed alternative measures of household savings in the U.S., U.K., Canada, and France, using as a basis alternative treatments of pension, consumer durables, and taxes on capital gains. Audenis *et al.* (2002) presented a review of the prevalent saving concepts and made some suggestions for improvements. Empirically, they also made some adjustments to the official saving rate for France, which was 15.9 percent in 2000, ranging from 7.4 to 28.4 percent. Harvey (2003) suggested several alternative ways to measure the saving rate and derived comparative saving rates among OECD member countries that were based on various adjustments.

In the late 1980s, when Japan’s high saving rate was the focus of a great deal of interest, some Japanese scholars, for example Hayashi (1986),⁴ found that Japan’s National Accounts differed from the those of the U.S. in many aspects. Some studies, e.g. Horioka (1995) and Iwamoto (1996), improved upon Hayashi’s

³Source: World Bank (2002).

⁴See also Ando (1985).

findings in various respects. However, Horioka (1995) also showed that the biases in Japan and the U.S. with respect to depreciation and expenditures on consumable durables, for example, were mutually offsetting to a considerable extent.

In contrast with the boom in research on the measurement of savings of other countries, the measurement of savings in China has not yet received the attention that it warrants and there is little literature on the issue. Most empirical studies simply follow the official savings data and sometimes even confuse bank deposits with saving, mainly because these completely different terms have exactly the same Chinese translation. Therefore, there is an urgent need to conduct further research on this issue and to provide a solid empirical foundation for measuring the saving rate in China on an internationally comparable basis.

In the study reported here, we are concerned mainly with household savings, because the household sector supplies more savings to the Chinese economy than the government and business sectors. For example, during the period from 1992 to 1997, the business (Non-Financial Enterprises Sector and Financial Institution Sector) and government sectors in China borrowed 45.4–51.3 percent and 10 percent, respectively, of their capital from other sectors, whereas the household sector provided 70.5–76.0 percent of its savings to other sectors.⁵

The remainder of the paper is structured as follows. Section 2 compares the method that is currently used in China to measure household saving with that in the U.S. Five differences in the scope of measurement and in concepts used are noted, and relevant adjustments to the official data are made for both countries. Section 3 presents the empirical results and discusses their implications. Section 4 concludes.

2. METHODOLOGY

The personal income and outlay account of the National Income and Product Accounts (NIPAs) of the Bureau of Economic Analysis (henceforth, BEA) in the U.S. measures saving by deducting outlays from disposable income during a particular period, which follows the System of National Accounts (SNA) standards and is currently the most acceptable approach to measuring saving.⁶ The Flow of Fund Accounts (tangible transaction) (henceforth, FFAs), which have been released by China's National Bureau of Statistics (henceforth, NBS) since 1992, measures saving by a similar approach. These two sources provide the most comparable household savings data for both China and the U.S. Therefore, our comparison and recalculation use these two accounts as a basis. FFAs in China are compiled with a lag of three years, so our study covers a period of 13 years, from 1992 to 2004.

The saving rate is a ratio that has savings as the numerator (in our case, household savings). The rate will differ according to which economic variables are used as the denominator. In general, there are two candidates for the denominator:

⁵Source: Flow of Fund Accounts of China, 1992–97 (National Bureau of Statistics, 2002).

⁶There are several other ways, e.g. by adding inflows and outflows of wealth in a given period, or by comparing asset holdings at the start and the end of a period.

(1) the economic scale of a country, measured as GDP or GNP,⁷ and (2) disposable income (DI).

These two ways of calculating the saving rate have different implications. The first can be used to show how a country's savings are allocated among different sectors of the economy (by using the saving of different sectors as the nominator). Thus, it is preferable to use it in models of economic growth and when measuring national savings. The second can reveal household behavior with respect to savings versus consumption, i.e. the household saving behavior. The latter measure is more internationally comparable and is applied in most countries, OECD member countries in particular; therefore, in this paper, the household saving rate is calculated by dividing household saving by disposable income.

We define savings by the following formula:

$$(1) \quad \text{Savings} = \text{disposable income} - \text{outlays}$$

The U.S. National Income and Product Accounts

The personal income and outlay account of the U.S. NIPAs derives disposable income and outlay as follows:

- (2) personal disposable income = compensation of employees + proprietor's income with IVA and CCAdjustment + rental income of persons with CCAdjustment + personal interest income + personal dividend income + government social benefits to persons + other current transfer receipts – personal contributions for social insurance – personal tax and nontax payments
- (3) personal outlays = personal consumption expenditures + interest paid by persons + personal transfer payment to the rest of the world

Flow of Funds Accounts of China

The FFAs (tangible transaction) of China divide the economy into five sectors: the non-financial enterprises sector; the financial institutions sector; the government sector; the household sector; and the rest of the world. The household sector corresponds to the personal sector in the U.S. NIPAs. The disposable income and outlays of China's household sector are calculated as follows:

- (4) household disposable income = value added + wages and wages in kind income + social security contribution, employers + land rental income + interests + dividends + other property income + social security benefits – social security contribution, employees + social allowances + other current transfer sources – other current transfer uses – taxes on income – net taxes on production

⁷Either GDP or GNP can be used depending on whether the domestic saving rate or national saving rate is needed.

(5) household outlays = household consumption expenditures

We can calculate the Chinese household saving rate from the FFAs (tangible transaction) and obtain the U.S. personal saving rate directly from the NIPAs. However, they are not comparable in several important respects.

Different Scopes of Households

In the context of China, the term “households” refers to resident individuals or groups of resident individuals who share common living facilities, pool together all or part of their income, have properties at their common disposal, and share their housing, food, and other consumer goods and services (National Bureau of Statistics, 2005). The term “persons” in the U.S. accounts refers to individuals, non-profit organizations that primarily serve individuals, private non-insured welfare funds, and private trust funds (Seskin and Parker, 1998). From comparison of the definition of the two terms, it is evident that China’s household sector does not include Non-Profit Institutions Serving Households (NPISH), while the U.S. personal sector does. In fact, the Chinese statistical agencies categorize non-profit organizations as falling into the government sector (National Bureau of Statistics, 2005, p. 463). This is understandable and inevitable in China at her current stage of development, because the great majority of these institutions in China have a strong governmental background. Some of them are even former government agencies. This is in contrast to the case in the U.S., where non-profit organizations are also non-governmental. Therefore, deducting the NPISH saving from the U.S. personal saving, we obtain a more comparable saving rate of the two countries (see Table 1).

“Net” and “Gross”

Disposable income in the U.S. NIPAs refers to income after deducting consumption of fixed capital (CFC). Hence, the savings calculated from this income is on a net basis. By contrast, the household disposable income in the FFAs of China is not adjusted by deducting CFC. Hence, the saving that is recorded is conceptually gross saving. Therefore, in order to obtain the net household savings for China, it is necessary to subtract CFC from the household disposable income. This adjustment reduces China’s official saving rate significantly.

However, although the net saving rate measures the real saving level of a country more accurately than the gross saving rate, we do not have any data on China’s CFC by sector and therefore cannot estimate net saving for China. The gross saving rate can be compared more easily among different countries, because (i) most countries provide gross saving rates rather than net saving data, and (ii) it is difficult to measure CFC in different countries consistently. Therefore, instead of deducting CFC from the household disposable income in China, we add the U.S. CFC to its household saving to derive the adjusted gross savings and the saving rate for the U.S. The results are presented in Table 2.

TABLE 1
HOUSEHOLD SAVING RATES ADJUSTED FOR SAVINGS BY NON-PROFIT ORGANIZATIONS, 1992–2004 (IN PERCENTAGE POINTS)

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	1992–2004 Average
China, before adjustment	31.1	29.9	32.6	30.0	30.8	30.5	29.9	27.6	25.5	25.4	28.6	28.9	31.7	29.4
U.S. personal saving rate	7.7	5.8	4.8	4.6	4.0	3.7	4.3	2.4	2.3	1.8	2.4	2.1	2.1	3.7
China–U.S. gap in saving rates before adjustments	23.4	24.1	27.7	25.4	26.8	26.8	25.6	25.3	23.1	23.6	26.2	26.8	29.6	25.7
U.S. household saving rate	7.5	5.6	4.7	4.4	3.7	3.0	3.8	1.7	1.6	1.4	2.2	2.0	1.8	3.3
China–U.S. gap in saving rates adjusted for savings by non-profit organizations	23.7	24.4	27.9	25.6	27.1	27.5	26.2	25.9	23.8	23.9	26.4	26.9	29.8	26.1

Notes:

Data on China come from our calculation based on the FFAs (tangible transaction) in the Comprehensive parts of the *China Statistics Yearbook* (National Bureau of Statistics, 2000–07).

Personal saving rate of the U.S. is obtained from Table 2.1, National Income and Product Accounts Table. The household saving rate of the U.S. is calculated by subtracting the saving by non-profit organizations from the personal saving.

TABLE 2
ADJUSTMENT TO HOUSEHOLD SAVINGS AND SAVING RATE FOR CONSUMPTION OF FIXED CAPITAL, U.S., 1992-2004 ((1)-(6) IN BILLIONS OF DOLLARS, (7) AND (8) IN PERCENTAGE POINTS)

Year	Household Disposable Income (1)	Household Outlays (2)	Household Savings (3)	Household CFC (4)	Adjusted Household Disposable Income (5) = (1) + (4)	Adjusted Household Saving (6) = (5) - (2)	Household Saving Rate Before Adjustment (7) = (3)/(1)	Adjusted Household Saving Rate (8) = (6)/(5)
1992	4,728	4,376	353	97	4,825	449	7.5	9.3
1993	4,890	4,619	271	100	4,990	372	5.5	7.4
1994	5,128	4,889	239	107	5,235	346	4.7	6.6
1995	5,378	5,142	236	113	5,491	349	4.4	6.4
1996	5,659	5,452	207	118	5,777	325	3.7	5.6
1997	5,957	5,780	177	125	6,082	302	3.0	5.0
1998	6,372	6,131	240	133	6,505	373	3.8	5.7
1999	6,669	6,555	114	145	6,814	259	1.7	3.8
2000	7,167	7,050	117	155	7,322	271	1.6	3.7
2001	7,471	7,363	108	172	7,642	280	1.4	3.7
2002	7,822	7,653	169	187	8,009	355	2.2	4.4
2003	8,157	7,990	166	202	8,358	368	2.0	4.4
2004	8,674	8,515	160	236	8,910	395	1.8	4.4

Notes:

Household disposable income, outlay and savings are from Table 2.1, National Income and Product Accounts Table.

Data on household CFCs are from Table 5.1, National Income and Product Accounts Table. Accurately, the account is for "households and institutions." Here we neglect the slight difference.

Consumption and Services

The household consumption data in the FFAs in China are obtained from the household consumption data in the expenditure-side GDP accounts. These data yield the total final consumption expenditure on goods and household services. In principle, these services include those offered to the employees by the employers in the form of compensation and transfers in kind; services from owner-occupied housing; and financial intermediate and insurance services that are provided by financial institutions and insurance companies, respectively (National Bureau of Statistics, 2007). However, in practice, GDP accounts in China do not include financial intermediate and insurance services.⁸ Thus, the final consumption is greatly underestimated and, consequently, the savings of Chinese households is overestimated.

The final use data in the Use table of China's Input–Output (IO) table are based on the GDP accounts by expenditure approach. However, the IO makes adjustments to certain items, one of which is the finance intermediate and insurance services adjustment⁹ to the household consumption data. The household consumption data in the IO tables for China include imputed services from the finance and insurance industry. The result is that the household consumption data in IO tables are more accurate conceptually and more comparable to the U.S. consumption in NIPAs than the consumption data in the FFAs of China. Therefore, we use the finance and insurance consumption data in China's IO tables to adjust the household consumption and then the saving in China. This procedure will reduce the Chinese saving rate.

However, as the most recent available Use table of China's IO table is for 2000 (see Xu *et al.*, 2005), it is necessary to estimate the consumption data for the finance and insurance service from 2001 to 2004. We assume that, for these four years, the ratio of finance and insurance service to final household consumption before adjustment is a constant.

We can further estimate the ratio of finance and insurance services to the unadjusted household consumption from the historical data, and obtain 0.0344 with a variance of almost zero. So we set the ratio to 0.0344. Then, for example, in 2001:

$$\begin{aligned} & \text{final household consumption before adjustment (4,589,810 million} \\ & \text{Yuan)} \times 1.0344 = \text{final household consumption before adjustment} + \\ & \text{finance and insurance service (157,669 million Yuan)} = \text{adjusted} \\ & \text{household consumption after adjustment of finance and} \\ & \text{insurance service (4,747,479 million Yuan)} \end{aligned}$$

Details on an annual basis are given in Table 3.

⁸This information comes from personal communication with staff in the Input–Output Table Division of the Department of National Accounts in the NBS.

⁹The adjustment of finance and insurance service in the following sections, is calculated as follows: adjustment of finance and insurance service = dummy output of finance and insurance industry $\times r_H$, where:

(1) dummy output of financial sector = interest income – interest outlay + commission income

(2) $r_H = \frac{\text{absolute value of household interest outlay} + \text{household interest income}}{\text{absolute value of interest outlay} + \text{interest income, financial sector (household included)}}$

TABLE 3

ADJUSTMENT TO FINAL HOUSEHOLD CONSUMPTION FOR IMPUTED SERVICES OF FINANCIAL AND INSURANCE INDUSTRY, CHINA, 1992–2004 (IN HUNDRED MILLION YUAN)

Year	Final Household Consumption (1)	Consumption Adjustment of Financial and Insurance Industry (2)	Household Consumption After Adjustment of Finance and Insurance Service (3) = (1) + (2)
1992	12,460	365	12,825
1993	15,682	544	16,226
1994	20,810	801	21,610
1995	26,944	941	27,885
1996	32,152	1,139	33,292
1997	34,855	1,090	35,945
1998	36,921	1,302	38,223
1999	39,334	1,407	40,742
2000	42,911	1,460	44,372
2001	45,898	1,577	47,475
2002	48,882	1,679	50,561
2003	52,686	1,810	54,495
2004	63,834	2,193	66,026

Notes:

Final household consumption is from the FFAs (tangible transaction) in the Comprehensive parts of the *China Statistics Yearbook* (National Bureau of Statistics, 2000–07).

Consumption adjustments for the financial and insurance industry for 1992–2000 are provided by the Input–Output Division, the National Accounts Department, the NBS.

Household consumption after adjustment for finance and insurance services for 2001–04 are from our estimation, as mentioned in the text.

Contributions and Benefits of Social Security

In U.S. NIPAs, social insurance benefits are counted as income, but the social insurance contributions of both employees and employers are not counted as savings. In China, social insurance benefits and social insurance contributions of employees are treated in the same way as the U.S. NIPAs. However, social insurance contributions of employers are included in the compensation for employees; hence, they are included in household savings. Therefore, in order to get a more comparative measurement of savings between the U.S. and China, it is necessary to subtract the social insurance contributions of employers from the household disposable income in China. This will reduce both the household savings (numerator) and the disposable income (denominator), and will reduce China's household saving rate. The results are included in column (4) of the final presentation table (Table 4).

It is worth noting that the adjustments could be considered as either reallocations of savings among different sectors or different categories of savings, because the sum is national savings, which remains constant throughout our adjustments.¹⁰ Employers' social security contributions are paid to the social security pools, so they should be deducted from the household income and thus the household savings, and then incorporated into the government income and thus the government savings.

¹⁰We thank an anonymous referee for pointing this out to us.

TABLE 4
ADJUSTMENT TO HOUSEHOLD SAVINGS AND SAVING RATE FOR SOCIAL SECURITY CONTRIBUTIONS, INTEREST AND OTHER CURRENT TRANSFERS, CHINA, 1992–2004
((1)–(10) IN HUNDRED MILLION YUAN, (11) AND (12) IN PERCENTAGE POINTS)

Year	Household Disposable Income (1)	Household Final Consumption (2)	Household Savings (3) = (1) – (2)	Social Insurance Contribution, Employer (4)	Household Interests Uses (5)	Other Current Transfer Uses (6)	Household Consumption After Adjustment of Finance and Insurance Service (7)	Adjusted Household Disposable Income (8) = (1) – (4)	Adjusted Household Outlays (9) = (7) + (5) + (6)	Adjusted Household Saving (10) = (8) – (9)	Household Saving Rate Before Adjustment (11) = (3)/(1)	Adjusted Household Saving Rate (12) = (10)/(8)
1992	18,090	12,460	5,630	377	6	292	12,825	17,713	13,123	4,590	31.1	25.9
1993	22,374	15,682	6,692	526	12	418	16,226	21,848	16,656	5,192	29.9	23.8
1994	30,862	20,810	10,052	742	20	398	21,610	30,120	22,028	8,092	32.6	26.9
1995	38,491	26,944	11,547	1,006	17	366	27,885	37,485	28,268	9,217	30.0	24.6
1996	46,443	32,152	14,291	1,252	24	439	33,292	45,191	33,754	11,436	30.8	25.3
1997	50,121	34,855	15,267	1,453	25	566	35,945	48,668	36,536	12,132	30.5	24.9
1998	52,689	36,921	15,767	1,563	31	597	38,223	51,126	38,851	12,275	29.9	24.0
1999	54,354	39,334	15,020	2,052	28	70	40,742	52,302	40,840	11,463	27.6	21.9
2000	57,563	42,911	14,651	2,492	40	220	44,372	55,071	44,631	10,440	25.5	19.0
2001	61,499	45,898	15,601	3,088	81	35	47,475	58,411	47,591	10,820	25.4	18.5
2002	68,448	48,882	19,567	4,049	367	184	50,561	64,400	51,112	13,288	28.6	20.6
2003	74,088	52,686	21,403	4,883	537	346	54,495	69,205	55,379	13,827	28.9	20.0
2004	93,388	63,834	29,554	5,780	1,673	103	66,026	87,608	67,802	19,806	31.6	22.6

Notes:

Household disposable income, consumption, savings, interest uses, other current transfer uses, and social insurance contributions of employers for 1997–2004 are from the FFAs (tangible transaction) in the Comprehensive parts of the *China Statistics Yearbook* (National Bureau of Statistics, 2000–07).
Social insurance contributions of employers for 1992–96 are from Table 11.25, *China Labor Statistical Yearbook* 2003 and 2005 (National Bureau of Statistics, 2003–05). Note that although China did not have a national mandated pension system until 1997, medical insurance until 1998, unemployment insurance until 1999, and work-injury insurance until 2003, the contributions of social security were non-zero before that, because there were usually experiments and thus contributions in some regions and ownerships in advance of the final unified social security system throughout China.
Household consumption after the adjustment of finance and insurance services is from Table 3.

Outlay Account

By comparing equation (3) with equation (5), we see that the measures of China's and the U.S.'s household outlays differ from each other to a great extent. The U.S. outlays are composed of consumption expenditure, interest payments, and the transfer payment to the rest of the world, while the outlays of China only measure the first item. The exclusion of interest payments and other transfer payments from the household outlays causes an upward bias in the household saving rate of China. Thus, we make another adjustment by adding interest payments and other transfer payments to the household consumption. The complete procedures to adjust China's household saving rate are shown in Table 4.

3. RESULTS OF THE BILATERAL COMPARISON

We have analyzed several differences in the household savings measurement between China and the U.S. and made necessary adjustments for both sides to derive the comparable saving rates. The main findings, summarized in Table 5 and Figure 1, are as follows.

TABLE 5
HOUSEHOLD SAVING RATES AFTER ADJUSTMENT, 1992–2004 (IN PERCENTAGE POINTS)

Year	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	1992–2004 Average
China after adjustment	25.9	23.8	26.9	24.6	25.3	24.9	24.0	21.9	19.0	18.5	20.6	20.0	22.6	22.9
U.S. after adjustment	9.3	7.4	6.6	6.4	5.6	5.0	5.7	3.8	3.7	3.7	4.4	4.4	4.4	5.4
China–U.S. gap after adjustment	16.6	16.3	20.3	18.2	19.7	20.0	18.3	18.1	15.3	14.9	16.2	15.6	18.2	17.5

Notes: China and the U.S. data come directly from Table 4 and Table 2, respectively.

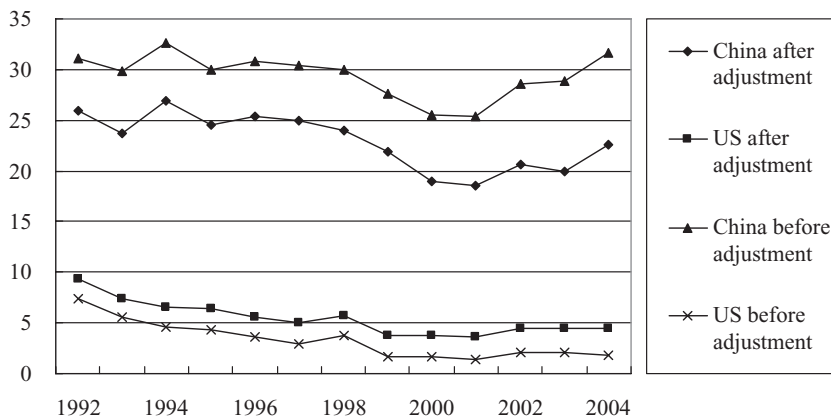


Figure 1. Comparison of Household Saving Rates between China and the U.S., before and after Adjustment

First, once the Chinese measurement of the household savings and saving rate is made comparable to the U.S. NIPAs, for the period from 1992 to 2004, the average gap between China and the U.S. shrinks by 8.6 percentage-points, from 26.1 percent before the adjustment to 17.5 percent after it, which is far narrower than the figure of over 30 percent that is cited by most previous studies.

Second, the household saving rate of China during these 13 years declines from the 29.4 percent average, which is based on the unadjusted official data in FFAs of China, to 22.9 percent on average after our adjustments. In particular, the adjusted household saving rates for China in 2000, 2001, and 2003 are below 20 percent. Therefore, the usually cited figure of up to 30–40 percent has substantially overstated China's household saving level.

A number of estimates that have been cited for China's saving rate in previous studies can be compared with our results in terms of both value and concept. Woo (2005) gave a figure of 40 percent for China's saving rate in 2002. This figure is actually the national saving rate, calculated by national savings divided by GDP.¹¹ Modigliani and Cao (2004) estimated a time series of household savings from 1953 to 2000.¹² The World Bank (2002) published a figure of 42 percent for China's saving rate in 1999, which was a domestic saving rate in concept.¹³ The *International Statistical Yearbook* (Liu, 1999) stated that China's gross savings as a percentage of GDP was 42.7 percent in 1997. The People's Bank of China (1999) measured China's national saving rate and household saving rate from 1978 to 1997. In their research, the household saving rate was derived by adding financial savings to tangible savings¹⁴ and the household saving rate was calculated both as a percentage of GDP and of household income. In the calculation of Wei (2002), the household saving rate of China was 24.6 and 29.9 percent in 1997 and 1998, respectively. Guo and Han (1991) confused savings with the bank deposits of the households, a confusion that was caused by the traditional use of the Material Product System (MPS) in China.

In addition, the following remaining discrepancies should be emphasized, which could not be taken account of due to the lack of available data. Firstly, although the contributions to the social security system by employees and employers have both been deducted from adjusted household saving of China, as in the U.S. NIPAs, remarkable differences remain in the contributions made to social security in the two countries, because the social security systems differ greatly. The U.S. social security system was developed as early as the 1930s. Social security contributions in the U.S. cover such items as old-age pension, survivors' insurance, disability benefit, hospital insurance, supplementary medical insurance, unemployment benefit, railroad retirement, veterans' life insurance, and temporary

¹¹Strictly speaking, the national saving rate is national savings divided by GNP in the U.S. NIPAs.

¹²In order to obtain data over a 50 year horizon, they estimated savings by capital inflow and outflow, which is a different measurement from that in China's FFAs; see footnote 6 in Section 2. Further, they used the official release of consumption and estimated savings to deduce the household disposable income.

¹³They used $\frac{\text{GDP} - \text{consumption}}{\text{GDP}}$, where consumption cannot be used to derive savings accurately.

¹⁴This is a different measurement from the one in China's FFAs; see Section 2. The method that we use in this paper, based on FFAs of China, is more internationally comparable.

disability benefit. By contrast, China did not have a nationwide social security system until the 1990s. Further, social security contributions in China covered only basic pensions, unemployment benefit, basic medical insurance, and work-injury insurance until late 2005. Therefore, the huge gap between the social security systems should also be a critical factor for China's high saving rate with respect to the U.S., even after our adjustments.

Secondly, there is a substantial gap between the personal current tax rates of the two countries. In China, the ratio of household taxes to compensation of employees averages 6.8 percent from 1992 to 2004, while the average in the U.S. reaches 18.5 percent.¹⁵ We attribute this difference to the great differences between the taxation systems in the two countries. The scope of property taxes in the household current taxes of China is much narrower than that in the U.S. For example, inheritance tax and estate tax, which constitute a substantial proportion of household tax outlays in the U.S., are not imposed in China. However, a formal proposal has been made to implement such taxes in China in the next few years. Thus, it might be that the Chinese household saving rate will decrease further as changes are made to China's taxation system. Furthermore, as the non-tax payments (donations and fees, fines, and forfeitures) that are deducted from the U.S. personal income are not deducted from personal income in China, the household saving rate of China will decrease somewhat if we take this into account.

Thirdly, rental income in China refers merely to land rental income, which has a null record in the FFAs of China (tangible transaction), whereas the similar item in the U.S. is far more comprehensive, including rents on real estate, non-agricultural housing, and such franchise fees as patent, copyright, and ownership of natural resources. However, we are unable to estimate and adjust this part, because the relevant data in China are not available.

4. CONCLUDING REMARKS

It should be emphasized that the adjustment and comparison in this paper are based on the method used to measure household saving in the U.S. NIPAs. However, some studies have cast doubt on the NIPA approach. Nordhaus (1995) even claimed that the current measurement for savings is a stone-age definition used in the information age. However, given that the aim of our study is to obtain comparative household saving rates to compare the true saving levels of China and the U.S., we are reluctant to become involved in such a debate. For the purposes of deriving a saving rate for China that can be compared to that of other countries, NIPAs' definition is the most relevant and suitable, because it is within the SNA framework and results derived on its basis are, for the most part, internationally comparable.

Besides, difference in the quality of data should always be a key issue of attention in international comparisons. This is also true for comparing the saving rate between China and the U.S. The statistical data in the U.S. would seem to be superior to that in China for two reasons.

¹⁵Sources: calculation based on FFAs (tangible transaction) of China and NIPAs of the U.S.

Firstly, the U.S. and China are at different stages of economic development, which seems to have had an influence on the development of the statistical systems in the two countries, because improving the quality of data is both time-consuming and expensive. As a developing country, China needs to improve its statistical system in many respects. For example, most developed countries collect data by the extensive use of sampling surveys, a method that has not been used widely in China, due to the lack of human and non-human inputs in the statistical surveys.

Secondly, there are several other important differences between China and the U.S. For example, China lacks a national credit system and personal checks are not widely used throughout the country. Further, a number of economic activities are out-of-bank transactions with frequent use of cash, which cannot be captured by statistical surveys; hence a great deal of personal assets and economic activities are not covered by statistical data in China. This might have some effect on the calculation of China's household saving rate.

Thirdly, the NBS in China only released its first comprehensive national economic census on December 6, 2005. Using the results of this census as a basis, the NBS then raised China's GDP for 2004 by 16.8 percent in current prices. One of the most remarkable adjustments was that the GDP of the service sector was increased by 2,130 billion Yuan, which accounts for 93 percent of the increase in GDP for the whole economy. The service sector's share of the GDP was increased from 31.9 to 40.7 percent. The NBS also reported the adjustments to the growth rate of China's GDP for the period 1993–2004. Because of these revisions, the average growth rate of GDP growth from 1979 to 2004 is 9.6 percent, 0.2 percent higher than the previous release.

The newly released data and the adjustment to the historical data that was based on the census results are calculated by industry by the production approach and the data are also categorized by industries. The data from the economic census can also be used to adjust the GDP from the expenditure side and thus to adjust consumption, investment, and so forth. While we are mostly interested in the structural changes in consumption and investment after the adjustment, the related results have not been released. It might be that the related adjustments to the expenditure-side GDP will have an effect on the household saving rate.

However, the purpose of the economic census has been to provide fuller coverage of data collection in the Chinese economy. A study by the Asian Development Bank (2006) has demonstrated that the GDP has been underestimated due to the fact that statistical surveys in the service sectors have not collected all relevant data. NBS has little information on the activities of *getihu* (unincorporated enterprises) and other privately owned businesses in personal, business, cultural, and other services, and also on such activities of the newly emerging service sector as computer and software services, real estate, equipment rental, and business and consultancy services. So, if the economic census mainly covers more activities by small enterprises and unincorporated enterprises, the estimates for both investment and consumption would increase at the same time. Therefore, although we do not know whether and how the expenditure structure of China's GDP will change for the time being, it is quite possible that consumption and the investment structure of GDP would not be changed substantially and the effect on the results for the household saving rate will be negligible.

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