

Inequality in Japan

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Official government estimates of income inequality in Japan computed from the Ministry of Health, Labor and Welfare's National Livelihood Survey (Komumin Seikatsu Kiso Chosa) and the Ministry of Internal Affairs and Communications' National Survey of Family Income and Expenditure (Zenkoku Shohi Jittai Chosa) show quite different results. This paper uses data from the Keio Household Panel Survey (KHPS) over the period 2004 to 2009 to provide some alternative estimates of income inequality and wealth inequality, and to investigate how inequality in Japan has changed as a result of the global financial crisis.

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1. Introduction

The purpose of this paper is to provide some estimates income inequality, and information about wealth inequality for Japan using the Keio Household Panel Survey (KHPS).

In relation to its analysis of income inequality, this paper closely follows Ohtake's (2008) analysis of income inequality in Japan until 2004. In relation to its analysis of wealth inequality, this paper closely follows the analysis of OECD (2008, chapter 10).

Section 2 provides a brief introduction to the data used in this paper, the Keio Household Panel Survey (KHPS). Estimates of income inequality based on official Japanese statistics and KHPS are discussed and compared in section 3. Section 4 provides some estimates of income mobility between 2004 and 2005, and also between 2007 and 2008. Section 5 presents an introductory analysis of wealth inequality in Japan.

2. Keio Household Panel Survey (KHPS)

The basic data employed in this paper are drawn from the first six waves of the Keio Household Panel Survey (KHPS) that has been undertaken in the first quarter of every year from 2004 to 2009. KHPS is a household survey conducted by Keio University with the financial assistance of the Japanese Ministry of Education, Culture, Sports and Technology. Respondents were limited to Japanese aged between 20 and 69 at the time of the first wave of the survey in 2004 (people born between 1 February 1934 and 31 January 1984). In 2004, this group represented roughly 67% of the total Japanese population. KHPS aims to investigate various aspects of household behavior including the labour supply behavior of respondents, and, if present, their spouses, and various aspects of household behavior in relation to consumption, and asset holdings of households. Individuals for the initial KHPS survey in 2004 were randomly selected from throughout Japan using a two-stage sampling procedure. The first KHPS survey was conducted in the period of January-March 2004 with a sample size of 4005 households, and is referred to as KHPS2004. Subsequent surveys are denoted by the abbreviation KHPSSxxxx, where xxxx is the year the survey was conducted. Later

waves of KHPS were also conducted in January to March every year. A supplementary sample of 1419 randomly selected individuals aged between 20 and 69 at the time of the survey in 2007 (people born between 1 February 1937 and 31 January 1987) was added in 2007.

One key question about the KHPS relates to how representative the data it contains is of the Japanese population it surveys. Kimura (2005) investigated this issue by comparing descriptive statistics for various variables for KHPS2004 with comparable descriptive statistics for official surveys. He found that for households with more than two individuals, KHPS2004's average expenditure was about 20,000 yen lower than the average expenditure reported in the Household Expenditure Survey (Kakei Chosa=KC). (KHPS: 279,000 yen, KC: 302,000 yen). For households with more than two individuals including at least one individual who works as an employee, KHPS2004's average income was about 15,000 yen lower than the average income reported in the Survey of Family Expenditure (Kakei Chosa=KC). (KHPS: 460,000 yen, KC: 445,000 yen). Kimura (2005) argues that these differences can be largely attributed to differences in survey methods, and the match between the two sets of results is rather good. For assets and liabilities, Kimura (2005) finds that there is a relative close match between KHPS and official surveys in relation to the proportion of people with loans and holdings deposits, but that for households with more than two people the average deposits held by households surveyed in KHPS tends to be slightly lower, and the average amount of loans tends to be slightly higher than official estimates.

With any panel survey data set, problems associated with attrition are potentially quite important. Table 1 shows the attrition rates for the initial KHPS sample and for the supplementary sample. It is quite possible that attrition will influence the analysis undertaken in this paper, but for the moment, the impact of attrition is ignored. Miyauchi *et al.* (2006), McKenzie *et al.* (2007) and Naoi (2008) contain some analyses of the impact of attrition on various analyses that have been conducted using the KHPS data set.

3. Income Inequality

There are two official sources of estimates of income inequality, the National Livelihood Survey (Kokumin Seikatsu Kiso Chosa, NLS) conducted by the Ministry of Health, Labour and Welfare, and the National Survey of Family Income and Expenditure (Zenkoku Shohi Jittai Chosa, NSFIE) conducted by the Statistics Bureau of the Ministry of Internal Affairs and Communications.

NSFIE is a nationwide survey conducted every five years with the latest survey results being available for 2004. In 2004, the NSFIE surveyed nearly 60,000 households, 54,372 households with 2 or more members, and 5,002 single member households. Two types of NLS surveys are conducted, and both are nationwide surveys. A large scale survey is conducted every three years with the latest survey results being available for 2007. About 230,000 households were surveyed in 2007. Smaller scale surveys are conducted in other years.

Figure 1 graphs estimates of the Gini coefficients computed using the annual income for all households and for aged households for NLS data, and annual income and a month's consumption expenditure for all households for the NSFIE data. For annual income for all households, both the NLS and NSFIE data indicate that income inequality is rising over time in Japan. As is well-known in Japan, the estimates of the Gini coefficients from the NLS and NSFIE data are quite different. According to Ohtake (2008), the estimates of the Gini coefficients computed using the NSFIE data only include households with two or more people, while the NLS data includes data for single member households when calculating the Gini coefficients. Ohtake argues that estimates of inequality using data excluding single member households are usually lower than those including single member households because single member households tend to have lower incomes than household with two or more members.

Ohtake (2008) argues that there are two key reasons for the observed rise in income inequality in Japan. The first reason is the aging of the Japanese population. As the NLS estimates of the Gini coefficients for the elderly presented in Figure 1 indicate, these coefficients tend to be higher for the elderly. The second reason is changes in the distribution in the number of persons in a households.

Between 1980 and 2005, the average number of members in a household fell from 3.2 and 2.7, and the percentage of single member households rise from 18% to 24%.

Using KHPS data, Table 2 presents estimates of the Gini coefficients based on yearly pre-tax income for the household (denoted yearly pre-tax income), monthly consumption of the household (denoted monthly consumption), and monthly pre-tax income of the respondent and his/her spouse if present (denoted monthly pre-tax income) over the period 2004-2009. In computing these estimates, 'income' and 'consumption' refer to income and consumption adjusted by the square root of household size equivalence scale, respectively. Since these estimates also include single member households, the NLS estimates of the Gini coefficients are probably the most relevant point of comparison. The KHPS estimates of the Gini coefficients based on yearly pre-tax income are slightly lower than those for the NLS, but they show that between 2004 and 2008 little change in income inequality based on pre-tax yearly income is observed. Given that respondents to KHPS2004 were limited to individuals aged between 20 and 69, it is likely that households with household heads aged over 70 are significantly underrepresented. As the NLS estimates indicate, until quite recently income inequality tended to be higher for this group. In contrast, the consumption based estimates of inequality show an upward trend over the period 2004 and 2009.

The Lehman Brothers shock occurred in September 2008. Figures for monthly income and monthly consumption relate to January in the year of the survey, so estimate of the Gini coefficient for monthly consumption for 2009 is a post-shock estimate. The yearly pre-tax income figures relate to income in the relevant calendar year, so the income figure for 2008 includes a mix of both pre-shock and post-shock data. On the basis of this data alone, it is difficult to argue that the Lehman Brothers shock has had a significant effect on inequality in Japan.

Table 3 reports estimates of Gini coefficients from KHPS for five age groups and for yearly pre-tax income, monthly pre-tax income, and monthly consumption in 2004 and 2008. These suggest that income inequality rises between households with a household head aged in the thirties and households with a household head aged in the fifties.

4. Income Mobility

Ohtake (2008, p.93) argues that “less frequent movements across income classes would result in larger inequality in lifetime income, even if inequalities were unchanged within each age group”. In order to examine whether movements across income class have changed over time, Ohtake computes one year transition probabilities for 1985-1986 and 2000-2001. These transition probabilities are estimates of the percentage of households in the i 'th income quintile in the initial year that are in j 'th income quintile in the subsequent year.

Since the KHPS is a longitudinal survey following the same household over time, it is relatively easy to compute these transition probabilities. Table 4 provides estimates of the transition probabilities based on annual pre-tax income for the households between 2004 and 2005, and 2007 and 2008. The upper half of Table 4 shows that 70% of the households in the first quintile in 2004 remain in the first quintile in 2005. The lower half indicates that about 72% of the households in the first quintile in 2007 remain in the first quintile in 2008. Both these estimates are much higher than Ohtake's estimates for 1985-1986 of 61% and 2001-2002 of 56%, respectively. At the top end of the distribution, 75% and 74% of households in the top income quintile in 2004 and 2007 remain in the top income quintile in 2005 and 2008, respectively. Consistent with Ohtake's findings, there appears to be much more movement out of the three middle quintiles. The percentage of households in the same quintiles in 2004 and 2005, and 2007 and 2008 was essentially the same at 60%, this is about the same as Ohtake's estimate for the 1990s, but higher than his estimate for 2000 to 2001 when it was 53%. This suggests income mobility may have fallen over the 2000s.

5. Wealth Inequality

This section of the paper closely follows the analysis of OECD (2008, chapter 10) which analyzed wealth inequality using the Luxembourg Wealth Study (LWS) data set.. KHPS collects data on two broadly defined financial assets, deposits and securities (which includes stocks, bonds, investment trusts), the total amount of loans that a household has outstanding, and the household's principal residence. Where a residence is owned, respondents are asked to report its acquisition price as well

as its current estimated value. KHPS does not collect any information on second houses or houses purchased for investment purposes.

Table 5 corresponds to Table 10.1 in OECD (2008). The proportion of Japanese households reporting that they own some type of financial assets, around 80%, is similar to that reported for almost all LWS countries. The proportion of households owning some portion of a principal residence, around 80%, is much higher than in LWS countries. For household debt, Japan lies between the 22% of households in Italy and the 80% of households in Norway.

Table 6 corresponds to Table 10.2 in OECD (2008). In terms of the proportion of the portfolio held in non-financial assets, financial assets and debt, Japan seems rather close to Canada. The significant fall in the proportion of the household portfolio held in the principal residence between 2004 and 2009 is rather strange given that housing prices have been rising over this period.

Table 7 provides information that is similar to that contained in Figure 10.1 in OECD (2008). The median holdings of the principal residence, financial assets, and net worth all increase with the age of the household head. Debt appears very much to be concentrated in the 35-55 year age group, although the median is rather small given that one of the principal reasons for a loan is to purchase a house.

Table 8 indicates the distribution of net worth overall, and in each age group, and its first row corresponds to Table 10.3 in OECD (2008), and. As the household head ages, the proportion of households with negative net wealth falls and the proportion of households with positive net wealth rises.

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Table 1: Attrition within the KHPS Survey

Survey Year	Initial Sample			Supplementary Sample			Total
	Final Sample Size	Attrition Rate From Previous Survey (%)	Cumulative Attrition Rate (%)	Final Sample Size	Attrition Rate From Previous	Cumulative Attrition Rate (%)	Total Sample Size
2004	4005						4005
2005	3314	17.3	17.3				3314
2006	2884	13.0	28.0				2884
2007	2636	8.6	34.2	1419			4055
2008	2442	7.4	39.0	1240	12.6	12.6	3682
2009	2290	6.2	42.8	1132	8.7	20.2	3422

Source: KHPS2004, KHPS2005, KHPS2005, KHPS2006, KHPS2007, KHPS2008, KHPS2009

Table 2: Estimated Gini Coefficients for Japan

	2004	2005	2006	2007	2008	2009
Yearly pre-tax income	0.326	0.319	0.321	0.322	0.327	n.a.
Monthly pre-tax income	0.359	0.351	0.350	0.337	0.345	n.a.
Monthly consumption	0.255	0.272	0.271	0.305	0.297	0.310

Source: Estimated using KHPS2004–KHPS2009.

Table 3: Estimated Gini Coefficients by Age Group

Age Group	2004			2008		
	Yearly Pre-tax Income	Monthly pre-tax Income	Monthly Consumption	Yearly Pre-tax Income	Monthly pre-tax Income	Monthly Consumption
-29	0.298	0.240	0.180	0.286	0.271	0.257
30-39	0.277	0.255	0.205	0.281	0.282	0.240
40-49	0.287	0.310	0.247	0.284	0.293	0.300
50-59	0.324	0.410	0.254	0.354	0.357	0.365
60-	0.357	0.392	0.286	0.345	0.409	0.307

Source: Estimated using KHPS2004, KHPS2005, KHPS2008, KHPS2009.

Table 4: One-Year Transition Probabilities: 2004–2005 and 2007–2008

		2005 Quintiles					
		1	2	3	4	5	
2004 Quintiles	1	70	19	8	3	1	100%
	2	21	51	21	5	2	100%
	3	6	19	50	21	4	100%
	4	3	6	17	54	20	100%
	5	2	3	5	15	75	100%
		2008 Quintiles					
		1	2	3	4	5	
2007 Quintiles	1	72	20	5	2	1	100%
	2	18	54	21	6	2	100%
	3	6	22	49	19	4	100%
	4	2	6	21	52	19	100%
	5	1	0	5	21	73	100%

Table 5: Household Asset Participation (%)

	2004	2009
Non-Financial Assets		
Principal Residence	76	80
Investment Real Estate	–	–
Financial Assets	79	79
Deposit Accounts	78	78
Securities	17	22
Debt	42	47

Table 6: Household Portfolio Composition
(Percentage share of Total Assets)

	<u>2004</u>	<u>2009</u>
Non-Financial Assets	76	65
Principal Residence	76	65
Investment Real Estate	–	–
Financial Assets	24	35
Deposit Accounts	21	29
Securities	4	6
Total Assets	100	100
Debt	21	24
Net Worth	79	76

Table 7: Median Wealth Holdings by Age of Household Head (2004)
(Values in 10,000 yen)

Age Group	Principal Residence	Financial Asset	Loan	Net Worth
-24	0	15	0	15
25-34	0	60	0	100
35-44	1300	200	90	500
45-54	1800	250	120	1430
55-64	2000	500	0	2505
65-	2300	600	0	3300

Table 8: Distribution of Net Worth in 2004

Shares of Individuals (%)

Negative Net Worth Zero Net Worth Positive Net Worth

	13	7	80
All	13	7	80
-25	23	19	58
25-34	19	14	67
35-44	20	8	72
45-54	14	6	80
55-64	8	4	87
64-	4	4	92

Figure 1: Official Estimates of Inequality

