Analysis of the Net Worth of the Poor in Korea

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Executive Summary

Household assets can play a very special role in consumption smoothing especially in times of such economic downturn as the recent international financial crisis. Information on both income and wealth are required in evaluating income equivalent of the National Basic Livelihood Protection, which is the basis for the classification of Basic Livelihood Protection benefit recipients. Even though research on income inequality is quite popular in Korea, evidence is insufficient with regard to the nature of the wealth distribution of the poor.

In this study, we focused on the net worth, which is defined as the difference between asset and debt. We also proposed some policy recommendations for reducing inequalities in income. The concepts of both absolute and relative asset poor are used. In this study, the absolute asset poor is defined as the household that continues to have minimum cost of living for less than 6 months. On the contrary, relative asset poverty is defined as the household that has less than 40% of the median net asset. According to this criteria, the absolute asset poverty ratio is 13.3%, the relative asset poverty ratio 29.3%, the absolute income poverty ratio 10.2%, and the relative income poverty ratio 14.7%.

Some of the findings can be summarized as follows. First, the asset poverty ratio increases as the age of household head increases, and decreases as the education level of the household head increases.

Second, the Seoul Metropolitan area showed the lowest asset

poverty ratio of 9.9% and Cholla and Cheju the highest at 19.3%.

Third, single families were the group that showed the highest poverty ratio, and their poverty ratio decreased as the number of household members increased. Fourth, age, holdings of financial assets, housing tenure, urban residence are found to be major determinants of net-asset holdings.

Some of the policy implications can be summarized as follows. Asset-poor households are not able to accumulate net assets because they do not have enough income to cover basic consumption needs.

Therefore, in order to make the National Basic Livelihood Protection System more effective for the poor, creation of decent jobs and relaxation of the stringent family support criteria might be essential steps to take.

Introduction

Chapter 1
Introduction

1. Purpose of study

The poverty measure is a key social indicator in establishing public policies and evaluating poverty reduction programs. In the past, public policy on poverty alleviation was mainly based on the concept of income poverty. Income maintenance was the primary goal of public social policies targeting for poverty alleviation. However, wealth also plays an important role in alleviation of poverty especially in times of economic hardship. Wealth can provide economic security in times of economic hardship. For example, wealth can be used to pay for educational costs, housing purchase, and living costs after retirement.

In this study, I discussed the characteristics of households whose savings are insufficient to meet their needs during a period of economic hardship. The concept of asset poverty by Caner and Wolff (2004) was adopted. Specifically, they defined "a household is considered to be asset poor if it does not have enough wealth to meet its basic needs for a limited period of time."

Why do we need to consider asset poverty? That is because asset poverty and income poverty do not always change to the same direction. In their study of asset poverty in the United States for the periods of 1984-99, Cane and Wolff (2004) found

the severity of income poverty showed a sharp decline but the severity of asset poverty increased when the economy experienced economic growth and a stock market boom.

Income/asset inequalities in Korea increased since the emergence of the international financial crisis which was begun from the second half of 2009. A rapid deterioration of income/asset inequalities might further cause serious social problem. After the foreign exchange crisis in 1997, although there was consensus that deeper understanding is necessary for the asset accumulation of the poor, the working poor, and the near poor, the needs for basic research was not yet satisfied so far. Furthermore, in addition to incomes, assets are also counted in applying countable income criteria, additional analysis for the current status of the asset-poor might be useful for the refinement of the Basic Livelihood Protection system.

In addition to generating income from itself, assets can provide information on the financial stability of the household. It would be suffice to study income if asset is highly correlated with income. But, it is well known that the correlation between income and asset is relatively low, thus the discussion on the financial condition based solely on the income concept might not provide enough information on the financial condition of the households. (Keister and Moller, 2000).

Since most of the existing literature in Korea considered total assets rather than net assets, it is not possible to evaluate the financial soundness of the households especially in times of economic crisis we just experienced. Therefore, in this study, analysis is based upon the net asset, rather than the total asset.

Specifically, the net asset is defined as the difference between total asset and total debt.

Asset holdings of the poor might be an important source of on the effect of the inequality reduction through the Basic Livelihood Protection System. The purpose of this study is to provide alternative policy initiative for the alleviating inequalities by analyzing the asset holdings of the poor.

2. Review of Previous Studies

If our concern is to investigate the overall distribution of economic well-being or resources, analyzing the total wealth distribution would be sufficient. Here the total wealth is composed of human and non-human capital. In this study, we focus only on material assets of real property and financial claims. We analyze the concept of "net-worth", which is defines as the value of non-human assets minus all types of debts. In the following study we examine the determinants of holding household wealth and the cause of differences in asset holdings across households.

One of the reasons why we are interested in asset holdings is that most households can smooth consumption expenditures with asset holdings. For example, relatively higher consumption expenditure is expected in baby birth, or income declination due to retirement, or unexpected exogenous shocks. In this situation, most of the real and financial assets are tradable in the market, these assets might play an important role in smoothing consumption expenditure.

Most of the applied analyses on wealth holdings/distributions

cover only marketable wealth in order to avoid the complexity of difficulty of valuation problems. We also follow this tradition, and the non-marketable intangible assets, such as pension rights, life insurance, and entitlement to future government transfers (including social security wealth) are not included in the analysis.[1]

There are several stylized facts on the distribution of wealth that are based on the existing empirical literature. It is worthwhile to briefly review them here (Davies and Shorrocks, 1999).

1. Wealth is distributed less equally than labor income, total money income or consumer expenditure. While Gini coefficients in developed countries typically range between about 0.3 and 0.4 for income, they vary from about 0.5 to 0.9 for wealth. The estimated share of wealth held by the top 1% of families varies from about 15% to 35%, for example, whereas their income share is usually less than 10%.

2. Financial assets are less equally distributed than non-financial assets, at least when owner-occupied housing is the major component of non-financial assets. However, in countries where land value is especially important, the reverse may be true.

3. The distribution of inherited wealth is much more unequal than that of wealth in general.

4. In all age groups there are typically a group of individuals and families with very low net worth, and in a number of countries, including the US, the majority have surprisingly low financial

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1) Caner and Wolff (2004) defined net worth (or marketable wealth) as the sum of main home, other real estate, farm and business, stocks, checking and savings accounts, and other savings minus other debts.

assets at all ages.

5. Wealth inequalities has, on the whole, trended downwards in the twentieth century, although there have been interruptions and reversals, for example in the US where wealth inequality has increased since the mid 1970s.

Caner and Wolff (2004) estimated the size and severity of asset poverty in the United States for the years 1984-1999 using data from the Panel Study of Income dynamics (PSID). They find that, although there was a sharp decline in the official measure of income poverty rate, asset poverty is highly persistent and the severity of asset poverty increased for the two decades. They concluded that poverty reduction policy focused mainly on income maintenance was ineffective in making the poor self-sufficient, and policy redesign that can provide incentives for the asset poor to accumulate assets is necessary.

Leipziger, et al.(1992) analyze income and wealth of 4,291 households surveyed by Korea Development Institute (KDI), and report Gini coefficient of assets is 0.58 in 1988. The concentration ratio of the top 1%, 5%, and 10% households are 19%, 37%, and 48%, respectively. Furthermore, they reported that the land holdings is the most important factor of wealth concentration in Korea, top 25% of land owners have 90% of the total land values. They also suggested that adjustments based on balance sheets would substantially increase estimates of wealth concentration in Korea, due to the fact that land is probably undervalued by a significant margin, and that land holdings are distributed very unequally.

Lee and Lee (2001, 2001a, 2001b) analyzed Korea Household

Panel Study (KHPS) data compiled by the Daewoo Economic Research Institute (DWERI). They report that net asset inequality is increased before Foreign Exchange Crisis of 1997, debts of the lowest income group increased sharply after the Crisis. On the contrary, net assets of the richest group dramatically increased at the same time, most of the increase is due to the increase in the real estates.

Kim (2002) also investigates the dynamic patterns of the composition of household assets with DWERI's KHPS data. He reports several key features of the asset composition in Korean households. First, the asset composition reveals risk-aversing behavior of the households and second, the share of real estate in the asset composition is very high. Third, the degree if asset inequality is greater than that of income, whether only real estates are analyzed or not.

Nam (2007) investigated the holdings and inequalities of household wealth using Korea Labor Institute Panel Survey (KLIPS) data compiled by the Korea Labor Institute (KLI) for the period of 1999-2004. He reports some characteristics of the households wealth holdings in Korea as follows: first, the share of real estates is very high, second, net worth is more concentrated to the higher income group, third, bi-polarization of the asset holdings continued for the period of 1999-2004. The major determinants of the wealth poor are found to be household income, number of workers in the household, and whether they have owner-occupied housing or not.

Yoo (2007) performed survey analysis on the recognition of the income inequality, and reports that Koreans do not agree

with the basic assumptions of the relative inequality, as well as that they are more sensitive to the absolute income inequality (e.g., absolute income differences). He also recommends that income distribution policy should focus on the poverty reducing growth strategy, by pointing out the fact that the change in income inequality plays different role in economic growth and the change in poverty according to whether the nature of the change is temporary or not.

Nam (2008) investigated the inequality of household assets with KLIPS data (waves 2-9). As of 2006, Gini coefficients of the net worth and income are 0.731 and 0.438, respectively. The correlation coefficient between net asset and income is 0.313, which is somewhat lower than that of the US (0.49). The concentration ratio of net worth in the top 1% is 16.7%, top 5% and top 10% hold 39.8% and 54.3%, respectively. Therefore, net asset is more concentrated than income, and higher income group experienced more rapid asset accumulation in the 1999-2006 period. Inequality decomposition of the net assets tells us real estate contributed the most in acceleration of asset inequality.

Nam and Kwon (2008) investigated asset distribution, inequality, decomposition and asset poor with KReIS data compiled by the National Pension Service (NPS). They find that asset is more concentrated than income, and that the share of the asset poor increased as the age of the householder increased. Based upon logit analysis on the determinants of asset poverty, they find that the probability of asset poverty is higher if the householder is female, renting a house, living with a child under 5 years old. On the contrary, the probability of asset poor is lower if

the household have higher education, higher income level, good health condition, or living in her own house.

Section 2 analyzes the asset holdings of the poor and section 3 provides some empirical evidence on the determinants of the asset holdings of the poor. Finally, section 4 provides summary of major findings and some policy recommendations will be provided.

Chapter

02

Asset holdings of the income poor

Chapter 2

Asset holdings of the income poor

1. Data Description

In this section, the asset holdings of the poor will be discussed. We start by briefly summarizing the main features of the KOWEPS data, and describe the criteria for the poverty threshold, and finally present some empirical findings on the demographic and/or sociological characteristics of asset and income for the poor in Korea.

Current income is our major concern, and the standard definition by the Korea National Statistical Office can be summarized as follows: current income is the sum of labor income, business and secondary income, property income and transfer income.

〈Table 1〉 Definition of income

NSO		LIS(or OECD)				
cur. income	labor income	compensation of employees	primary income	market income: MI	gross income: GI	disposable income: DI
	business and secondary income	gross self-employment income				
	property income	realized property income				
	private transfer	occupational pensions + other cash income				
	public transfer	social insurance cash transfers + social assistance				
non-cur. expend.	pub pension social ins.	social security contributions				
	tax	direct taxes				
	others					
cons. expend.						

Source: Yoo and Kim (2003).

The second wave of the Korean Welfare Panel Study (henceforth Koweps) data are used for the analysis. Actual survey and data compilation are carried out jointly by Korea Institute for Health and Social Affairs (henceforth KIHASA) and the Social Welfare Research Institute of Seoul National University.

The second wave of Koweps data have several important features: first, it is the largest survey in the sense that 6,580 households (13,478 person) are covered. Second, it is more reliable than other surveys because it has smaller sampling error in statistical sense. Third, the survey covers the whole country, including Cheju island as well as the rural area. Some other surveys in Korea only cover urban areas, and thus have limited representativeness for the population.

In this paper, the raw data of household survey are used for the analysis, and the net worth data are calculated from the data. Above all, the net worth are calculated by subtracting total debt from total assets. Current income is composed of labor income, business and/or secondary income, property income, and transfer income. Current income is the main income concept used in this analysis.

2. Characteristics of asset holdings

One of the most interesting characteristics in asset holdings is the huge share of the real estate for the entire age group. About 50 percent of the households have some liabilities, and household heads in their 40s are the most indebted. Most of the debt seems to be related to the purchase of housing, and

younger households have relatively more financial securities.

In terms of the size of net asset by age group, household heads in their 60s have the largest amount and then decline with retirement. This inverted U-shaped asset holding behavior corresponds to the life cycle-permanent income hypothesis in the economics literature.

⟨Table 2⟩ Asset holdings by age group

	20s	30s	40s	50s	60s	70s	80s	90s
no. of hh	203	1,109	1,319	1,029	1,340	1,212	352	14
weight (%)	3.8	23.0	25.1	16.7	16.7	11.5	2.9	0.1
real est.	3,173.4	6,463.4	9,837.2	12,759.7	16,102.2	10,227.3	7,881.2	4,643.8
financial	1,179.9	1,905.4	1,724.9	1904.4	2,582.1	1,274.4	1,328.7	129.9
other	291.6	401.9	410.8	458.1	395.2	136.4	67.5	0
tot asset	4,644.9	8,770.6	11,973.0	15,122.3	19,079.6	11,638.2	9,277.5	4,773.8
tot debt	808.4	1,558.7	1,983.4	1,874.8	1,855.3	981.3	470.2	73.9
net asset	3,836.5	7,162.3	9,852.0	12,940.1	15,350.4	10,530.3	8,696.0	4,699.8

Note: 1) calculated from equivalized data.
   2) top/bottom-coding was done for the top/bottom 1% values.

3. Poverty Criteria

(1) Income Poverty

There are two different concepts of income poverty: one is absolute income poverty, and the other is relative income poverty. Absolute income poverty is determined by Minimum Costs of Living (MCL) and the amount of countable income. Income poor, near poor, next to near poor households can be classified as in table 3.

⟨Table 3⟩ Classification of the absolute income poor

income groups		Classification based on absolute poverty
income poor	absolute income poverty	countable income < MCL
non-income poor	near poor	MCL ≤ countable income ≤ MCL × 120%
	next to near poor	MCL × 120% < countable income ≤ MCL × 150%
	non-poor	MCL × 150% < countable income

A household is classified as an absolute income poor if the amount of countable income is less than the minimum cost of living (MCL). Near poor household is a household that has a greater than the MCL, but less than 120% of the MCL. Next to near poor household is a household with countable income greater than 120% and less than 150% of the MCL. Finally, a household which has higher income than 150% of MCL is classified as non-income poor.

Table 4 exhibits the composition of the poor based in absolute and/or relative income poverty. The absolute income poverty rate is 10.2% in second wave, 9.5% in the third wave. The relative income poverty rate is 14.7% if poverty threshold is 40% of the median income, and is higher than the absolute income poor (in wave 2).

〈Table 4〉 Household Composition

(unit: household, %)

wave, no of households, and weights		absolute income poverty			relative income poverty		
		poor	near poor	next to near poor	40% of med. income	50% of med. income	60% of med. income
2nd	no. of hh	1,149	248	328	1,647	2,263	2,759
	weights(%)	10.2	2.6	3.8	14.7	21.1	26.7
3rd	no. of hh	1,018	215	284	1,555	2,122	2,600
	weight(%)	9.5	2.2	3.3	14.8	20.5	26.5

(2) Asset poor

In this study, two different concepts of asset poor are considered: one is absolute asset poverty, and the second is relative asset poverty. When we say asset in the remaining part of the paper, it means net asset that is equal to the amount of total assets minus total debts. Net asset is the basis for defining asset poor for the analysis, and the definition of asset poverty we used here is based upon Haveman and Wolff (2001). According to their definition, "a household is considered to be 'asset poor' if it access to 'wealth-type resources' is insufficient to enable the household to meet its 'basic needs' for some limited 'period of time'." We used 6-month for the limited period of time because the unemployment benefit is paid for those who are unemployed for more than 6-months. For wealth-type resources, we use net asset, and applied equivalence scale if necessary. For the 'basic needs', we used minimum cost of living to make it operational.

A household is in absolute asset poverty if it has net asset

less than the six-month of minimum cost of living. In the actual data analysis, two criteria of six-month MCL are used: one is derived from the households with net asset less than 6-month of MCL, and the other is derived from the average of 6-month MCL of the overall households. Relative asset poverty can be defined as the 40%, 50%, and 60% of the net assets, but 40% criterion is used in the following analysis.

In table 5, the absolute asset poverty rate is higher when the criterion of six-month minimum cost of living for the overall households is applied than the 6-month minimum cost of living of individual households. Relative asset poverty rate, which is the share of households that have less than the 40% of median net asset, is 29.3% (in wave 2), and 29.4% (in wave 3). Asset poverty rate is higher than the income poverty rate because asset holdings are concentrated in the higher income/asset groups, which is consistent with the stylized fact of asset distribution discussed earlier.

⟨Table 5⟩ Summary of asset poverty rates

(unit: household, %)

		absolute asset poverty		relative asset poverty		
		MCL of HH	average of HH MCL	40% of Median	50% of Median	60% of Median
2nd wave	no of hh	1,163	1,188	2,416	2,676	2,956
	weights(%)	13.3	13.5	29.3	33.0	37.1
3rd wave	no. of hh	1,080	1,121	2,338	2,610	2,869
	weights(%)	12.4	12.7	29.4	33.6	37.7

Note: obtained from KOWEPS second and third waves.

4. Asset poverty by demographic/ sociological characteristics

In this section, the asset poor is defined as the households whose net assets are less than the amount of six month minimum cost of living, and some descriptive statistics on income and assets by demographic/sociological characteristics of the household heads will be presented.

(1) Asset poverty by household age

According to the life-cycle/permanent income hypothesis, household in their sixties who is just about to retire have the largest assets. In our data, the hypothesis is also true in the sense that the asset poverty rate is lowest in the sixties (9.9%), and becomes higher as the age of household age increases.

〈Table 6〉 Summary of asset poverty by age

(unit: household, %)

	10s	20s	30s	40s	50s	60s	70s	80s	90s	overall
overall	2	203	1,109	1,319	1,029	1,340	1,212	352	14	6,580
weight(%)	[0.2]	[3.8]	[23.0]	[25.1]	[16.7]	[16.7]	[11.5]	[2.9]	[0.1]	100.0
no. of poor	0	30	139	268	192	185	236	107	6	1,163
weight(%)	(0.0)	(14.8)	(10.0)	(14.9)	(13.1)	(9.9)	(17.1)	(27.5)	(37.1)	(13.3)
no. of non-poor	2	173	970	1,051	837	1,155	976	245	8	5,417
weight(%)	(100)	(85.2)	(90.0)	(85.1)	(86.9)	(90.1)	(82.9)	(72.5)	(62.9)	(86.7)

Note: figures in [ ] are row shares, and those in ( ) are column shares.

Current income of the asset poor are: 1.8 million won for the twenties, and then decreases with age. This is because labor income declined as the household age becomes higher. Net asset are -9.0 million won for the forties, -8.8 million won for the fifties, and net asset increase after the forties.

There are significant differences in net asset holdings by age groups between asset poor and the overall household. The overall groups showed inverted U-shaped and arrived its maximum at the 60s, whereas it is U-shaped and the maximum lies between 40s and 50s for the asset poor.

〈Table 7〉 Asset and income poverty by age

	20s	30s	40s	50s	60s	70s	80s	90s
no. of hh	30	139	268	192	185	236	107	6
weights(%)	0.6	2.3	3.7	2.2	1.6	2.0	0.8	0.0
labor income	1,438.7	1,127.9	780.7	687.2	254.3	35.5	22.0	44.3
business income	104.3	96.4	192.4	211.3	68.0	35.1	22.5	0.0
property income	0.0	0.5	1.4	4.9	5.1	3.1	3.9	0.0
public transfer	54.3	100.2	138.3	174.9	211.5	217.8	153.2	137.1
private transfer	192.2	77.1	96.0	138.6	179.7	285.0	315.9	347.6
current income	1,789.6	1,402.1	1,208.9	1,217.2	718.6	576.4	517.5	529.0
real asset	196.5	514.4	676.4	751.3	690.8	157.8	54.5	0.0
financial asset	445.9	226.9	122.2	137.0	65.2	44.0	65.0	132.1
other asset	180.0	132.5	63.5	56.1	43.2	8.5	0.8	0.0
tot asset	822.5	873.9	862.1	944.5	799.2	210.3	120.3	132.1
tot debt	1,006.4	2,102.7	2,198.6	2,583.5	1,557.2	391.8	74.1	0.0
net asset	-183.9	-754.5	-909.0	-883.8	-469.7	-172.0	46.2	132.1

(2) Asset poverty by family size

The share of 4-person household is the highest (29.1%),

3-person household is 22.2%, 2-person household is 23.4%, and 1-person household is 16.1%. Asset poverty rate id the highest for the one-person household (26.1%), whereas others show lower asset poverty rate than the overall asset poverty rate.[2]

⟨Table 8⟩ Summary of asset poverty rate by household size

(unit: household, %)

		1 per.	2 per.	3 per.	4 per.	5 per.	6 per.	7 per.	8 per.	total
overall	no. of hh	1,452	1,936	1,255	1,415	420	86	15	1	6,580
	weight(%)	[16.1]	[23.4]	[22.2]	[29.1]	[7.6]	[1.3]	[0.3]	[0.0]	[100.0]
poor	no. of hh	436	264	198	184	73	6	2	0	1,163
	weight(%)	(26.1)	(11.2)	(11.9)	(9.2)	(12.8)	(8.8)	(6.2)	(0.0)	(13.3)
non poor	no. of hh	1,016	1,672	1,057	1,231	347	80	13	1	5,417
	weight(%)	(73.9)	(88.8)	(88.1)	(90.8)	(87.2)	(91.2)	(93.8)	(100.0)	(86.7)

Note: figures in [ ] are row shares, whereas figures in ( ) are column shares.

Current income of 3-person household is 1.3 million won, 4-person household is 1.3 million won, and 1.2 million won for the 5-person household. The difference is primarily due to the differences in labor income. One-person households show the lowest current income, since their labor income is the lowest.

The magnitude of net asset is smallest for the 5-person household (-10.4 million won), and 6-person household is the next (-8.7 million won). The reason why one-person households show relatively larger net assets is that they have smaller total debts as well as smaller total assets.

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2) Seventies (30.8%) occupied the most in one-person household who is asset poor, and more than half of them are not in the labor force (62.2%).

〈Table 9〉 Asset poverty by household size

(unit: household, 10 thousand won, %)

	1 person	2 person	3 person	4 person	5 person	6 person	7 person
no. of hh	436	264	198	184	73	6	2
weights(%)	4.2	2.6	2.6	2.7	1.0	0.1	0.0
labor income	354.5	536.6	846.9	899.2	697.6	729.8	566.2
business income	80.4	43.7	157.3	201.2	247.9	98.3	11.1
property income	4.4	0.0	1.3	4.0	1.9	0	0
public transfer	161.8	191.0	149.1	125.5	137.8	157.3	309.5
private transfer	223.2	175.8	135.8	56.5	148.8	188.3	46.1
current income	824.3	947.2	1,290.5	1,286.5	1,234.0	1,173.7	933.0
real asset	195.5	517.3	592.7	832.9	851.5	1,275.7	133.3
financial asset	90.5	99.5	213.6	186.6	68.8	42.2	48.8
other asset	17.0	53.1	101.4	114.5	62.4	58.3	1.1
tot asset	303.0	669.9	907.7	1,134.0	982.8	1,376.3	183.1
tot debt	1,010.4	2761.2	3,070.8	2,488.3	2,357.3	2,247.0	106.6
net asset	-450.9	-585.8	-622.2	-763.4	-1,038.7	-870.7	76.5

(3) Asset poverty by participation of economic activity

The participation of economic activity of the household head can be either regular worker, temporary worker, employer, self-employed, or not in the labor force. Regular worker is the person who is either employed for more than one year or working without specifying the employment period due to company rules. Temporary workers are the person employed for more than one month and less than one year, whereas temporary workers are those employed for less than one month. Employer is those who operates business with more than one employee, and self-employed are those working alone or with non-paid family members. Unemployed are those who are over fourteen years old with ability to work and have looked for a job without working

for the last four weeks. Non-economically active population is for the person who is over fifteen and is neither employed nor unemployed.

According to the distribution of the households by participation of the economic activity, the share of regular workers are the highest (40.5%), non-economically active population is 22.0%, self-employed is 16.7%. Asset poverty by participation of economic activity of household head are: daily workers are 30.5%, temporary workers are 22.1%, non-economically active population is 21.8%, and unemployed are 21.2%. On the contrary, asset poverty rate of employers and regular workers are 3.6% and 6.9%, respectively.

⟨Table 10⟩ Asset poor by economic activity

(unit: household, %)

		regular	temporary	daily	employer	self-employed	unemployed	not in LF	no resp.	total
overall	no. of hh	1,874	364	518	183	1,471	224	1,945	1	6,580
	weight(%)	[40.5]	[5.9]	[7.4]	[4.2]	[16.7]	[3.4]	[22.0]	[0.0]	[100.0]
poor	no. of hh	172	89	175	7	129	60	531	0	1,163
	weight(%)	(6.9)	(22.1)	(30.5)	(3.6)	(7.5)	(21.2)	(21.8)	(0.0)	(13.3)
non poor	no. of hh	1,702	275	343	176	1,342	164	1,414	1	5,417
	weight(%)	(93.1)	(77.9)	(69.5)	(96.4)	(92.5)	(78.8)	(78.2)	(100.0)	(86.7)

⟨Table 11⟩ Asset poverty by participation of economic activity

(unit: household, 10 thousand won, %)

	regular	temporary	daily	employer	self-employed	unemployed	not in the LF
no. of hh	172	89	175	7	129	60	531
weights(%)	2.8	1.3	2.3	0.1	1.3	0.7	4.8
labor income	1,498.7	935.6	826.5	438.0	160.9	422.0	102.9
business income	43.1	66.4	39.6	1,449.7	812.5	28.2	22.7
property income	0.1	1.9	1.2	59.7	1.3	0.1	3.9
public transfer	73.9	132.4	91.3	87.9	96.5	177.1	255.5
private transfer	72.2	125.5	106.5	21.1	73.4	162.9	263.3
current income	1,688.1	1,261.7	1,065.1	2,056.5	1,144.6	790.3	648.4
real asset	723.8	563.4	472.9	3,295.6	641.4	485.4	312.5
financial asset	322.2	146.1	50.3	1,106.7	101.3	61.1	51.0
other asset	130.7	38.6	45.5	156.6	183.6	35.4	11.8
tot asset	1,176.7	748.1	568.7	4,558.9	926.3	581.9	375.2
tot debt	2,394.8	1,532.6	2,253.6	9,576.0	1,989.5	1,575.0	802.2
net asset	-818.0	-694.7	-871.1	-1,637.2	-799.8	-676.7	-281.5

The current income of the employer (20.6 million won) is the highest in magnitude, which is due to the fact that business income is the highest (11.5 million won). Current income of regular workers is 16.7 million won, and that of temporary workers is 12.6 million won. For the household head who is not in labor force, public transfer (2.6 million won) is the largest, private transfer (2.6 million won) is the next, and current income is the lowest (6.5 million won).

Next, asset holdings of the asset poor can be summarized as follows: the net asset of the employer is the lowest (-16.3 million won), but the total asset of them is the largest (45.6 million won). The reason why net asset of the employer is the lowest is that although the total asset is largest, the total debt of them is much larger than the total asset.

(4) Income and net asset holdings of the poor

〈Table 12〉 Asset and income Statistics by asset- and income poor criteria

(unit: household, 10 thousand won, %)

threshold	asset poverty			income poverty		
	absolute poverty		relative poverty	absolute poverty		relative poverty
	6 mo. MCL	average of 6 mo. MCL[1]	40% of med. net asset[2]	countable income[3]	current income[4]	40% of med. current income[5]
no. of hh	1,163	1,188	2,416	1,149	1,544	1,647
weights(%)	13.3	13.5	29.3	10.1	13.7	14.7
labor income	627.4	623.7	775.2	108.3	73.4	79.3
business income	125.3	121.9	137.3	34.1	43.1	46.2
property income	2.6	2.6	2.4	2.1	21.4	21.9
public transfer	156.8	158.6	142.9	130.9	174.4	177.0
private transfer	156.1	156.0	129.8	243.6	141.2	142.3
current income	1,068.2	1,062.8	1,186.8	518.5	453.0	466.4
real asset	524.6	518.7	917.5	802.7	4,626.8	4,662.4
financial asset	145.8	135.1	228.8	106.8	514.2	505.4
other asset	64.3	63.6	103.9	24.9	87.8	89.2
tot asset	723.1	717.4	1,250.2	934.5	5,228.8	5,257.0
tot debt	2,174.2	2,136.7	1,288.7	813.7	847.3	839.5
net asset	-621.0	-604.4	337.6	120.8	4,563.3	4,587.5

Note: 1) household below average of 6 month MCL of 3.182 million won
2) household below 40% of the net asset is 2.013 million won.
3) countable income below MCL.
4) current income of 6.457 million won and average of the countable income is in the neighbor of the MCL.
5) Less than the median of current income of 6.678 million won.
6) income and assets are all equivalized with the square root of the number of household members.
7) non-zero business incomes are replaced by 0.
8) top-/bottom-coding for the 1%

Table 12 summarizes income- and asset-poverty status for the household based upon poverty thresholds discussed above. When we compare the absolute asset poverty criteria which is 6 month MCL equivalent and relative asset poverty criteria which is 40% of the median net asset, relative asset poverty rate is 29.3%, which is higher than the absolute poverty rate of 13.3%. This reveals that the concentration of net asset is stronger than that of the income.

Decomposition of asset inequality in low-income group

Chapter 3

Decomposition of asset inequality in low-income group

1. Methodology

In this section, we analyzed the decomposition net-asset inequality of the income poor group by income decile, region, education of the household. The most popular measure of relative income inequality is Gini coefficient. It is based upon the following five axioms: anonymity, income homogeneity, population homogeneity, transfer principle, and decomposability.

Anonymity, also called symmetry, implies that there is no change in income inequality if they just exchange their income. Income homogeneity is also called scale independence, implies that there is no change in income inequality if their incomes increase or decrease in a proportional way.[3] Population homogeneity (also called population independence) implies that there is no change in income inequality if the population with the same income distribution duplicated or triplicated. Transfer principle is also called Pigou-Dalton's principles of transfer, the income inequality decreases if there is a mean preserving income transfer from the rich to the poor. Decomposability implies that

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[3] variance and standard deviation can not satisfy scale independence. Absolute Gini coefficient also does not satisfy this principle.

the overall inequality changes to the same direction if there is a change in the inequality in the subgroup of the population.

The generalized entropy index is known to satisfy the five axioms discussed above (Cowell, 1995). The indexes of the generalized entropy class can be easily decomposed of the inequality in within-group and/or between-group, and the sum of the inequality for the subgroups are equal to the overall inequality.

Income inequality, poverty, and welfare are all different concepts. Income inequality is wider concept than poverty in the sense that inequality focuses middle and upper portion of the distribution while poverty focuses the lower portion of the distribution.

In other sense, the concept of welfare is wider than that of the inequality. Both of them focus on the overall distribution. Welfare emphasizes both mean and variance of the distribution, whereas inequality focuses only on the variance.

2. Decomposition of the net asset inequality of the income poor

In order to analyze net asset inequality by income subgroup, households are divided into four different groups: income poor, near poor, next-near-poor, and non-poor. Generalized entropy measure with parameter value of 2 is employed for the analysis. In this section we present the results obtained from the equivalized measure only. The equivalent scale used here is the square root of the family size (modified OECD scale).

〈Table 13〉 Inequality decomposition

	entropy	share	α=2	absolute contribution	relative contribution
absol. poor	1543.1007	0.1016	0.0001	0.0194	0.0116
near poor	177.8376	0.0257	0.0005	0.0021	0.0013
next-near-poor	5.4210	0.0376	0.0037	0.0008	0.0005
non-poor	1.3086	0.8351	1.4226	1.5546	0.9304
within group	-	-	-	1.5769	0.9437
betw. group	-	-	-	0.0941	0.0563
overall	1.6710	1.0000	-	1.6710	1.0000

According to the table 13, the relative contribution of the within group inequality is 94.4% which is very high compared to the relative contribution of the between group inequality.

While the income inequality of the absolute income poor is the highest, and the degree of income inequality decreases as we move to the higher income group. The inequality contribution of the income poor is considerably small because the share of the income poor is just about 10% and the relative contribution is 0.01. It is clear that most of the inequality contribution comes from the non-poor income group (about 93%).

3. Inequality decomposition by area of residence

Now turn to the decomposition by the area of residence based upon urbanization. The inequality index of the generalized entropy GE(2) are: 1.672 for the 'city', 1.539 for the 'city-farm mixture', 1.450 for the 'metropolitan'. The shares of the region are: 44.6% for the city, 25.1 for the metropolitan, and 21.2 for Seoul.

The relative contribution of net asset inequality for the city

is the highest (39.1%), and 42.5% for the Seoul. The reason why Seoul has higher inequality contribution is due to the fact that the average of net asset in Seoul is the highest.

⟨Table 14⟩ Inequality decomposition by are of residence

	entropy	share	α=2	absolute contribution	relative contribution
Seoul	1.3225	0.2115	2.5391	0.7102	0.4250
Metro	1.4508	0.2509	0.4773	0.1738	0.1040
City	1.6717	0.4460	0.8757	0.6529	0.3907
County	1.2801	0.0819	0.5333	0.0559	0.0334
City-Farm	1.5390	0.0097	1.6554	0.0248	0.0148
within group	-	-	-	1.6175	0.9680
betw. group	-	-	-	0.0535	0.0320
overall	1.6710	1.0000	-	1.6710	1.0000

The Korea Welfare Panel Survey (KOWEPS) also has the classification by province. The results of inequality decomposition by provincial classification are summarized in table 15. The range of inequality index is 1.179~1.793: Cholla-Cheju province is the highest (1.792) whereas Kyeonggi is the lowest (1.1795). It is also found that most of the net asset is concentrated in Seoul/Kyonggi, whereas all the other provinces have lower net assets than the national average.

⟨Table 15⟩ Inequality decomposition by province

	entropy	share	α=2	absolute contribution	relative contribution
Seoul	1.3225	0.2115	2.5391	0.7102	0.4250
Kyeonggi	1.1795	0.2697	0.9304	0.2960	0.1771
Kyongnam	1.4777	0.1689	0.7249	0.1810	0.1083
Kyongbuk	1.2075	0.1013	0.5349	0.0655	0.0392
Chungnam	1.6717	0.0732	0.8173	0.1000	0.0599
Chungbuk	4.5313	0.0622	0.6862	0.1934	0.1157
Cholla-Cheju	1.7924	0.1131	0.3529	0.0716	0.0428
within group	-	-	-	1.6175	0.9680
betw. group	-	-	-	0.0535	0.0320
overall	1.6710	1.0000	-	1.6710	1.0000

Table 16 summarizes two-way tabulation of provinces and net asset intervals. As we already noticed before, the share of households with negative net asset is the highest in Cholla-Cheju. The share of net asset over 0.9 billion won is the highest in Seoul (2.6%), and Kyongnam is the second (1.1%).

⟨Table 16⟩ Classification of net asset by province and by asset level

(unit: ten thousand Won, %)

	negative	0	0~ 5,000	5,000~ 10,000	10,000~ 20,000	20,000~ 30,000	30,000~ 50,000	50,000~ 70,000	70,000~ 90,000	90,00 0이상	overall
Seoul	5.8	0.8	30.3	16.5	20.3	9.6	9.1	3.6	1.5	2.6	100.0
Kyeonggi	6.8	1.2	43.1	17.9	15.2	6.4	5.9	2.5	0.6	0.5	100.0
Kyongnam	7.0	1.5	40.4	21.7	19.6	6.1	1.4	0.8	0.5	1.1	100.0
Kyongbuk	6.7	1.3	46.1	22.4	12.6	6.3	3.5	1.5	0.3	0.3	100.0
Chungnam	6.3	1.1	41.3	18.0	20.6	4.4	5.8	3.1	0.3	0.7	100.0
Chungbuk-Kangwon	7.0	1.1	46.8	21.9	15.4	3.3	3.1	1.0	0.0	1.0	100.0
Cholla- Cheju	9.3	1.8	53.6	17.1	11.4	3.3	2.4	1.1	0.3	0.4	100.0
Overall	6.9	1.2	41.5	18.9	16.7	6.3	5.0	2.8	0.7	1.1	100.0

In the next chapter, we investigate the determinants of net asset holdings for the poor.

Determinants of net asset holdings for the poor

Chapter 4

Determinants of net asset holdings for the poor

1. Model

In most of the applied works, it is common to use regression models in analyzing the conditional mean of a dependent variable. But regression model approach in income inequality/poverty is not free from the effects of outliers. An alternative approach, called quantile regression, first introduced by Koenker and Bassett (1978), models the quantiles of the dependent variable given a set of conditioning variables, and does not require strong distributional assumptions.

The median regression technique is employed in this study, because it can control extreme values. Median regression is one way of quantile regression[4], which permits a more complete description of the economic distribution than conditional mean analysis alone, allowing us to describe how the median of the response variable is affected by regressors. Quantile regression model estimates conditional quantiles of the dependent variables as functions of observed covariates, it offers a distributionally robust method of modeling these relationships (Koenker and

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[4] As originally proposed by Koenker and Basset (1978), quantile regression provides estimates of the linear relationship between regressors and specific quantile of the dependent variable.

Hallock, 2001).

Handling outliers is a big hassle in analyzing stock variables such as net assets of the poor in this paper. Advantage of using quantile regression is that since we are using conditional percentile, rather than conditional mean, the expected value of the residuals need not be zero, and thus estimated parameters are not sensitive to the outliers of the dependent variable.

The dependent variable is net asset holdings, and the independent variables are age of household head, financial asset holdings (dummy), current income, household size, special job (dummy), self-employed (dummy), house owner (dummy), urban resident (dummy), etc.

⟨Table 17⟩ Descriptive statistics (by asset group)

(unit: year, 10 thousand won)

Class	variable	obs	mean	sd	min	max
over-all	age of head	6,580	52.2	14.920	16	98
	finalcial asset	6,580	0.8	0.358	0	1
	curr. income	6,580	3,526.8	3,268.042	0	100,900
	family size	6,580	2.9	1.280	1	8
	special job	6,580	0.1	0.288	0	1
	own business	6,580	0.2	0.369	0	1
	home owner	6,580	0.5	0.498	0	1
	urban	6,580	0.5	0.499	0	1
	net asset	6,580	10,844.9	19,827.2	-176,777	332,918
Class	variable	obs	mean	sd	min	max
asset poor	age of head	1,647	66.8	13.834	16	98
	finalcial asset	1,647	0.7	0.468	0	1
	curr. income	1,647	604.8	282.812	0	1,595
	family size	1,647	1.9	1.084	1	6
	special job	1,647	0.1	0.341	0	1
	own business	1,647	0.2	0.358	0	1
	home owner	1,647	0.4	0.498	0	1
	urban	1,647	0.4	0.491	0	1
	net asset	1,647	4,417.5	10,666.9	-176,776	312,116
Class	variable	obs	mean	sd	min	max
non-asset poor	age of head	4,933	49.7	13.606	19	97
	finalcial asset	4,933	0.9	0.327	0	1
	curr. income	4,933	4,030.7	3,283.606	668	100,900
	family size	4,933	3.1	1.229	1	8
	special job	4,933	0.1	0.277	0	1
	own business	4,933	0.2	0.370	0	1
	home owner	4,933	0.6	0.496	0	1
	urban	4,933	0.5	0.499	0	1
	net asset	4,933	11,953.2	20,807.7	-113,195	332,918

Note: poverty line is set to the 40% of the median.

2. Determinants of asset holdings for the poor

First of all, results from whole households indicate that net assets increases decreasingly as the age of household head increases. Households with financial assets have more net assets by about 11.9 million won than non-financial asset holders. Households with more current incomes have more net assets, self-employed households have more assets by about 11.1 million won, home owners have more by 47.8 million won, and urban residents have more net assets by 8.9 million won.

The results are quite similar for the non-asset poor households only. But there are several distinct points to mention when only the asset poor group is considered. First, age of household head (and its squared term also) is no longer significant. This implies that asset poverty prevails for the entire age groups. Therefore, poverty alleviation policy for the specific target group might not able to bring visible results in the short run.

Household with financial assets has more net asset by 8.1 million won than those without financial assets. Also, current income does not play an important role in asset formation of the poor. This is because the poor do not have enough income to save for the future if their income is not enough to cover expenditure for the family members.

⟨Table 18⟩ Determinants of net asset by asset group

	overall	asset poor	non-asset poor
age of hh	185.28	-27.87	55.21
(continuous)	(0.000)	(0.307)	(0.288)
squared age of hh2	-0.94	0.21	0.58
(continuous)	(0.006)	(0.332)	(0.226)
financial assets	1,119.17	807.65	1,451.44
(dummy)	(0.000)	(0.000)	(0.000)
current income	3.66	-7.98	4.04
(continuous)	(0.000)	(0.000)	(0.000)
square of current inc2	-0.004)	0.014)	-0.004)
(continuous)	(0.000)	(0.000)	(0.000)
household size	-223.34	-36.81	-147.97
(discrete)	(0.001)	(0.491)	(0.079)
special/manager1)	875.59	240.47	1,389.12
(dummy)	(0.002)	(0.213)	(0.000)
self-employed	1,143.96	104.16	1,545.74
(dummy)	(0.000)	(0.567)	(0.000)
own houses	4,780.46	4,682.00	4,658.26
(dummy)	(0.000)	(0.000)	(0.000)
metropolitan2)	887.81	707.95	858.92
(dummy)	(0.000)	(0.000)	(0.000)
intercept	-10,573.41	1,973.88	-9,222.91
	(0.000)	(0.024)	(0.000)
no. of obs.	6,580	1,647	4,933
Pseudo R2	0.2087	0.1625	0.2051

Note: 1) Special jobs group covers House Representatives, and Special scientists.
   2) Living in Metropolitan covers those living in Seoul or Metropolitan area.
   3) Figures in parenthesis are p-values.

According to the empirical analysis for determinants of asset holdings of the poor, asset poverty prevails for almost all age groups. This implies that we might not be able to get desired results from the policy that aims to reduce poverty by targeting specific socio-economic groups. Also, current income does not play an

important role in asset formation of the poor. This is because the poor do not have enough income to save for the future if their income is not enough to cover expenditure for the family members.

An increase in household size has positive effect on asset formation for the poor only. In turn, this implies the importance of providing job opportunities for the poor, because this will create additional income and eventually helps asset formation for the poor. It might be worthwhile for the government to provide special attention to the creation of job opportunities for the poor.

The reason why we do not observe significance in explanatory variables of special job or self-employed is that there is not enough cases in the sample. On average, households with their own houses have more assets by 46.8 million won, that urban households have more assets by 7.1 million won. The policy implication from these results is that one of the biggest obstacles to asset formation of the poor is the preparation of the residential housing for the family. Especially in the case of the poor with rental housing, high housing costs deteriorate life standards and as interfere asset formation. Especially special attention of providing housing plan should be given to those low-income households living in metropolitan area.

In order to have sound financial structure, every household member voluntarily needs to recognize her financial status exactly, and manages income creation, household consumption expenditure, saving, loaning etc. Therefore, in addition to disbursement of simple grants in aid, government need to be interested continuously in strengthening of financial affairs education for low-income households.

Summary and Conclusion

Chapter 5
Summary and Conclusion

Several important findings can be summarized as follows. When we identified asset poor household among income poor, there are considerable differences in income and asset between the asset poor and the non-asset poor. Therefore, the study of asset poverty can be served as an important basis in establishing policy for the asset formation of the low income household.

According to the empirical analysis for determinants of asset holdings of the poor, asset poverty prevails for almost all age groups. This implies that we might not be able to get desired results from the policy that aims to reduce poverty by targeting specific socio-economic groups. Also, current income does not play an important role in asset formation of the poor. This is because the poor do not have enough income to save for the future if their income is not enough to cover expenditure for the family members.

An increase in household size has positive effect on asset formation for the poor only. In turn, this implies the importance of providing job opportunities for the poor, because this will create additional income and eventually helps asset formation for the poor. It might be worthwhile for the government to provide special attention to the creation of job opportunities for the poor.

On average, households with their own houses have more assets by 46.8 million won, that urban households have more

assets by 7.1 million won. This implies that one of the biggest obstacles to asset formation of the poor is the preparation of the residential housing for the family. Especially in the case of the poor with rental housing, high housing costs deteriorate life standards and as interfere asset formation. In the longer run, the housing support policy should focus on the low income households living in urban area.

We should admit that the income support plan for the aged is not enough even though It is well-known that Korea is experiencing rapid aging due to the decline of birth rate and lengthening of life expectancy. The introduction of the reverse mortgage for the aged might be an alternative to assure stable housing life. But, according to the existing literature, only about 70% of households aged 65 and over own hoses and there are considerable differences in the gender of household heads. Specifically, the share of aged female householders are about half of male households. This implies that female households might not be able to be protected from income support program of housing property.

Also, since 67% of the aged have housing property of values less than 100 million won, it is hard to expect elevation of real income in practical sense. According to Kim(2007), in reality, poverty of the aged over 75 years old actually declines when they have housing property of 100 million won. Thus it is not possible for the aged who have less than 100 million won to get income support from the reverse mortgage. The aged who are excluded from the benefit group of the Basic Livelihood Guarantee due to the failure of asset criterion (even though they

satisfied income criterion) need to get the minimum level of life protection.

In order for the National Basic Livelihood Protection System to be the last social safety net for the poor, benefit of basic life protection should be provided to the currently non-receiving poverty group and the potential poverty group. The blind spot of the National Basic Livelihood Protection System exists due to the excessive support responsibility criterion and high translation ratio of asset to income criterion. Therefore, it is necessary for the effort of the government to entail non-receiving income poor into the National Basic Livelihood Protection System.

As a way of extending social safety net for the small-sized self-employed households, It might be useful to introduce a unemployment insurance savings accounts as proposed by Feldstein and Altman (1998). The system compulsorily make self-employed to deposit a certain part of the labor income while they are working, and allow to withdraw when they are unemployed. It can play a role of social safety net if government provide matching funds for the working poor among small-scaled self-employed, who increased rapidly after the financial crisis of 1997.

Among other things, it is necessary to have creation of decent jobs and vocational training that income may be connected to asset formation.

Policy consideration should be given to provide job opportunity and vocational training for the asset poor who are below 40s, and to extend jobs that has employment stability for the aged who are over 50s.

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Appendix

〈Table A1〉 Descriptive Statistics

(unit: year, 10,000 Won, person)

hh	var.	obs.	Mean	s.d.	Min.	Max.
total	age of h. head	6,580	52.2	14.92	16	98
	owns fin wealth	6,580	0.8	0.35	0	1
	current income	6,580	3,526.8	3,268.04	0	100,900
	household size	6,580	2.9	1.28	1	8
	special job	6,580	0.1	0.28	0	1
	own business	6,580	0.2	0.36	0	1
	own house	6,580	0.5	0.49	0	1
	urban area	6,580	0.5	0.49	0	1
	net asset	6,580	10,844.9	19,827.2	-176,777	332,918
poor	age of h. head	1,647	66.8	13.834	16	98
	owns fin wealth	1,647	0.7	0.468	0	1
	current income	1,647	604.8	282.812	0	1,595
	household size	1,647	1.9	1.084	1	6
	special job	1,647	0.1	0.341	0	1
	own business	1,647	0.2	0.358	0	1
	own house	1,647	0.4	0.498	0	1
	urban area	1,647	0.4	0.491	0	1
	net asset	1,647	4,417.5	10,666.9	-176,776	312,116
non-poor	age of h. head	4,933	49.7	13.606	19	97
	owns fin wealth	4,933	0.9	0.327	0	1
	current income	4,933	4,030.7	3,283.6	668	100,900
	household size	4,933	3.1	1.229	1	8
	special job	4,933	0.1	0.277	0	1
	own business	4,933	0.2	0.370	0	1
	own house	4,933	0.6	0.496	0	1
	urban area	4,933	0.5	0.499	0	1
	net asset	4,933	11,953.2	20,807.7	-113,195	332,918

Note: Household with less than 40% of median current income is classified as income poor.

〈Table A2〉 Summary statistics (NSO vs. KIHASA)

| Gross Wealth (GW)	NSO	KIHASA	Net Wealth(NW)	NSO	KIHASA
			% with X<0	3.9	6.0
No. of Obs.	8,275	6,580	% with X=0	0.1	0.9
% with X=0	0.3	1.6	% with X>0	96.0	93.1
% with X>0	99.7	98.4	Smallest	-34,865	-250,000
Smallest	0	0	Largest	1,596,080	586,630
Largest	1,726,080	593,330	Mean	24,614	19,645
Mean	28,112	22,712	Mean (with X>0)	25,253	21,440
Mean (with X>0)	28,182	23,082	Mean (with X<0)	-2,290	-5,081
Std. dev.	51,975	35,484	Std. dev.	47,673	33,742
Skewness	7.684	5.376	Skewness	80,445	5.255
Kurtosis	123.494	54.215	Kurtosis	135.631	58.254
Debt(D)	NSO	KIHASA	Income(Y)	NSO	KIHASA
			% with X<0		0.3
% with X=0	16.6	39.2	% with X=0	0	0.1
% with X>0	83.4	60.8	% with X>0	100.0	99.6
Smallest	0	0	Smallest	6	-50,000
Largest	164,794	250	Largest	160,000	100,900
Mean	3,948	3,071	Mean	3,421	3,661
Mean (with X>0)	4,731	5,048	Mean (with X>0)	3,421	3,707
Std. dev.	8,114	7537	Std. dev.	3,129	3,863
Skewness	7.802	13.237	Skewness	18.040	5,818
Kurtosis	109.908	58.254	Kurtosis	780.023	149.410

[Figure A1] Box plot (net asset and total income)
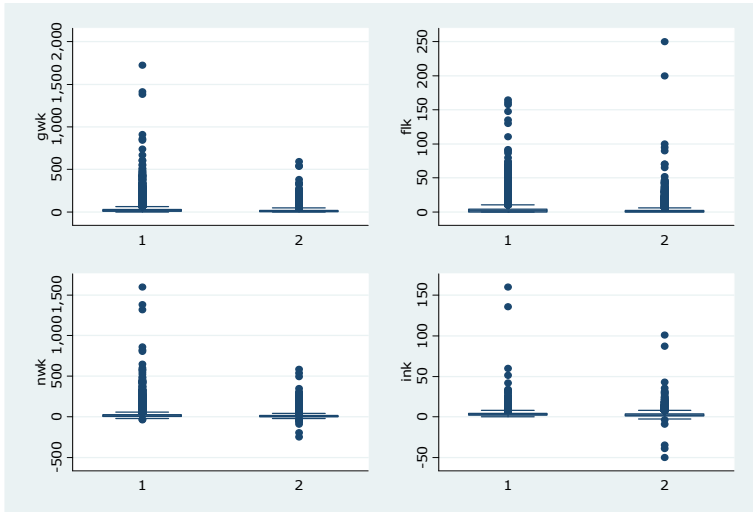
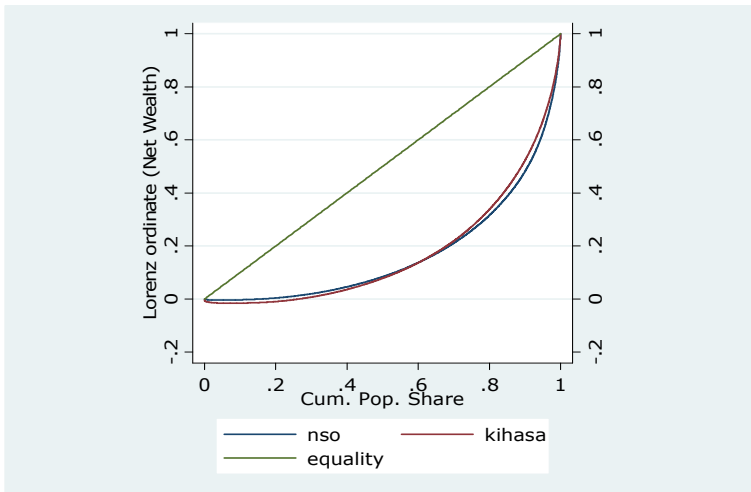Note: 1 = nso, 2 = kihasa. gw = total asset, fl = debt, nw = net asset, in = income

[Figure A2] Pen's parade (net asset and total income)
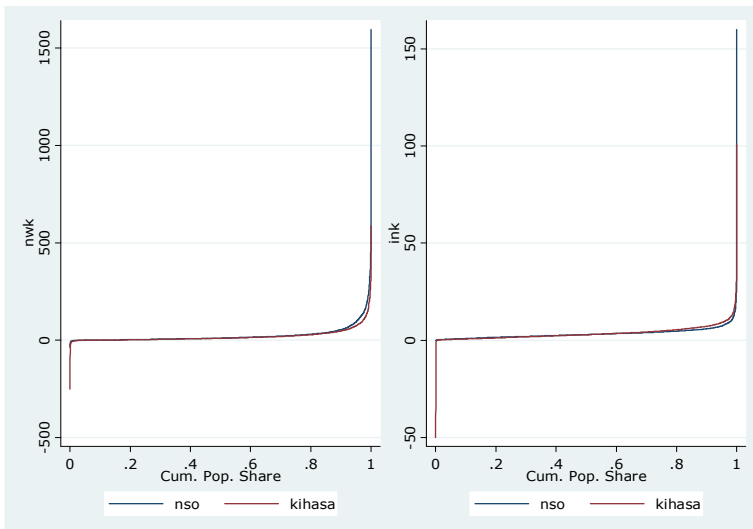
〔Figure A3〕 Adaptive kernel density (net asset and total income)
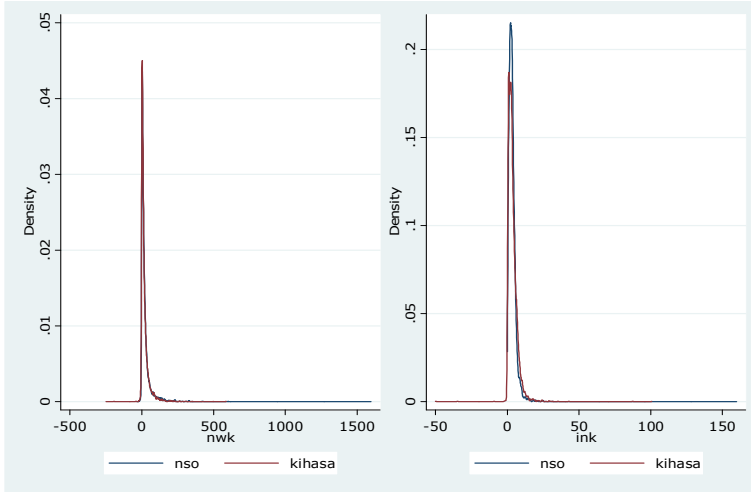
〔Figure A4〕 Lorenz curve (net asset)

〔Figure A5〕 Lorenz curve (Total income)