

# Income Distribution and Transfer Income as a Social Safety Net in Korea

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## Abstract

Using 5-year balanced household panel data, this paper shows that the inequality of per capita income in Korea aggravated during the financial crisis in 1998. Households belonging to low-income groups experienced more decrease in their wage income while households belonging to high-income groups experienced more decrease in their asset income. Furthermore the results show that social safety net programs were not yet in place during the initial period of the crisis. Public transfer income was not an effective social safety net device and did not contribute in decreasing income inequality. Private transfer income, on the other hand, was an effective device and narrowed the disparity in the income of households.

Keywords: income distribution, social safety net, transfer income

# 1 Introduction

The financial crisis that hit Korea in the end of 1997 was truly a watershed in the country's economic history. With the onset of the crisis, real GDP and real wage contracted by 5.8 and 10 percent, respectively, between 1997 and 1998. Unemployment rate jumped from 2.6 percent to 6.8 percent. Inflation rose to 7.5 percent.

It is often asked whether the burden of the economic crisis is being equally distributed among the rich and the poor, and what its short run and long run effects on income distribution are. One would expect income inequality to aggravate during recessive times since it is plausible that people belonging to high-income groups have more ways to protect their income than people belonging to low-income groups, and since the effect on labor income, which is basically the only asset of the poor, will be more serious. On the other hand, one would expect social safety net devices of the government like public transfer and private transfer income to protect the income of people belonging to low-income groups would contribute to improve income inequality. In Korea, for example, employment insurance and national pension, which constitute the public transfer income, were introduced in mid-1990 in order to reduce income inequality.

This paper examines the impact of the crisis on income distribution by exploring the change in income sources and the role of transfer income as a social safety net device. Using 5-year balanced panel data of the Korea Household Panel Survey (KHPS), this paper shows that per capita income inequality increased during the crisis. While labor income of low-income groups dropped more than that of high-income groups, asset income of high-income groups dropped more.

Furthermore, this paper shows that public transfer income, one of the main coping devices, did not play a positive role in reducing per capita income inequality. This

is because the public transfer income was consisted predominantly of pension and, not of public assistance and because social safety net programs were not yet in place during the initial period of the crisis. Private transfer income, on the other hand, played a positive role in reducing income inequality. These results are supported by the panel estimations of two companion papers, Kang (2001) and Guo, Kang, and Sawada (2001).

This paper is organized as follows. The next section discusses the data and evolution of income inequality. Section 3 explores the impact of different income sources on income inequality. Section 4 discusses the role of public and private transfer income as social safety net devices, and section 5 concludes.

## 2 Evolution of Income Distribution

### 2.1 Data

The KHPS data cover all prefectures except Jeju-do regardless of household's characteristics and region. The data is consisted of multi-purpose surveys in household and individual modules. Table 1 shows the period covered by each wave. This paper, however, excludes data for the first wave since they are not completely compatible with those in the later waves. This paper, thus, examines data for 1993-1998, including the first period of the Asian financial crisis, wave 6. In addition, the data structure follows the Panel Survey of Income Dynamics (PSID) in US. KHPS is conducted through a stratified random sampling by street blocks; eight and seven households from each block are randomly selected in large and small cities, respectively.

These data are compared with the survey data of the Family Income and Expenditure (FIAE) conducted by the Korea National Statistical Office. The FIAE survey

Table 1: Periods Covered by KHPS

Year	Wave	Period Covered
1993	1	Jan. 92 - Dec. 92
1994	2	Apr. 93 - Mar. 94
1995	3	Aug. 94 - Jul. 95
1996	4	Aug. 95 - Jul. 96
1997	5	Aug. 96 - Jul. 97
1998	6	Aug. 97 - Jul. 98

Table 2: Basic Indices of Korean Economy

Year	1994	1995	1996	1997	1998
GDP Growth Rate	8.3	8.9	6.8	5.0	-5.8
Unemployment Rate	2.4	2.0	2.0	2.6	6.8
CPI (1995=100)	95.7	100.0	104.9	109.6	117.8
Inflation (CPI)	6.2	4.5	4.9	4.5	7.5

Source: Economic Statistics Yearbook, The Bank of Korea (1999).

data is a repeated cross-section data. It covers households residing in only 72 cities, except 1) farmer's, 2) ...sberman's, 3) single person, and 4) foreign households. And this survey do not provide information on incomes of non-worker household heads. They are self-employed, employers, unemployed and people with no occupation.

## 2.2 Summary Statistics

Some basic economic data for Korea are presented in Table 2 for years 1994-1998. Between 1994 and 1997, annual average growth rate of GDP was 7.3 percent; unemployment and inflation rates were hovering around 2 and 4.5 percent, respectively. The onset of the ...nancial crisis, however, caused output growth rate to fall from 5.0 percent to -5.8 percent, and unemployment and inflation rate to collapse to 6.8 percent and 7.5 percent, respectively, in 1997-1998.

Tables 3 gives the de...nition of income categories while Table 4 reports the de-

scriptive statistics of income by its components of the balanced panel households.<sup>1</sup> All variables are expressed in 10 thousand won throughout the paper. The number of balanced households in every year is 1978. All income categories - labor, asset, transfer and other income - are in terms of per capita household at constant 1995 prices. The subcategories of transfer income - public and private- are shown as well. Between 1994 and 1997, per capita total income increased by 50 percent, with 26 percent rise in labor income and over 6.8 folds increase in asset income. Further, labor and asset income constituted 70 and 19 percent, respectively, of the total income in 1997. During this period, public and private transfer also doubled but occupied only a small percentage of total income, i.e., 3.8 percent in 1997.

With the onset of the crisis, per capita total income fell by 23.8 percent between 1997 and 1998. The two major income categories - wage and asset income - dropped by 24.4 and 42.2 percent respectively. Private and public transfer income, on the other hand, rose by 7 and 20 percent, respectively. They, however, occupied only a small share of the total income, 5 percent in 1998, for instance.<sup>2</sup> Furthermore, the share of labor income also decreased. For instance, the share of labor income decreased from 83.1 percent in 1994 to 69.1 percent in 1998.

### 2.3 Evolution of Income Inequality

Korea is generally cited as a country with rapid economic growth and low income inequality. There is also a general acceptance of the view that income distribution in

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<sup>1</sup>See Kang (2001) and Guo, Kang and Sawada (2001) for descriptive statistics of household characteristics, expenditure, asset and debt variables.

<sup>2</sup>25 and 31 percent of households received transfer income in 1997 and 1998, respectively. 20 and 22 percent of households received private transfer income and 10 and 17 percent received public transfer income in 1997 and 1998, respectively. See Kang (2001) for more detail.

Table 3: Definition of Income Variables

Labor Income	salaries workers, own business, temporary/part-time worker, and side business
Asset Income	interest or dividend incomes from saving/bond/shares, incomes from leasing land, house, or building and through selling land, house, or building
Transfer Income	
Public	national, private schools/civil servant/military, and veterans' pension, support from government or social organization, and employment insurance
Private	support from family or relatives
Other Income	time deposit, insurance payments received, time deposit insurance received, selling securities, selling real estates, loan repayments, lottery payment received, and others

Table 4: Descriptive Statistics of per capita Income Variables

Per capita Income	1994	1995	1996	1997	1998
Total income	516.27 (100)	664.75 (100)	761.82 (100)	776.30 (100)	591.55 (100)
Labor income	428.92 (83.1)	483.69 (72.8)	534.65 (70.2)	541.05 (69.7)	408.93 (69.1)
Asset income	21.59 (4.2)	118.54 (17.8)	151.02 (19.8)	146.69 (18.9)	84.75 (14.3)
Transfer income	13.81 (2.7)	20.70 (3.1)	25.79 (3.4)	29.50 (3.8)	29.45 (5.0)
Public	3.04 (0.6)	6.46 (1.0)	6.44 (0.9)	6.50 (0.8)	8.37 (1.4)
Private	10.77 (2.1)	14.22 (2.1)	19.32 (2.5)	22.99 (3.0)	21.17 (3.6)
Other income	51.95 (10.1)	46.35 (7.0)	53.88 (7.1)	62.62 (8.1)	70.37 (11.9)
Households	1978	1978	1978	1978	1978

Note: The percentage share is in the parentheses.

Korea has further improved recently.<sup>3</sup> In view of this, Table 5 shows income inequality measures between 1994 and 1998. Throughout this paper, all income categories are divided by the number of household members. Thus, we are considering the household as a unit characterized by a flow of income transfers and disregarding aspects related to the equivalence scale.

The first two measures - Gini coefficient and Theil index - are widely used in empirical work. The Gini coefficient, which is more sensitive to changes in the middle of the distribution, continuously increased from 0.38 in 1994 to 0.42 in 1995 and to 0.43 in 1998. And the Theil index, which is extremely sensitive to changes in the upper and lower tails, also continuously increased from 0.26 in 1994 to 0.34 in 1995 and 0.36 in 1998. The last two measures - coefficients of variation (CV) of per capita household income and standard deviation (SD) of log of per capita household income - are used in observing the dispersion of income in cross-country studies known as  $\beta$ -convergence.<sup>4</sup>

The larger the values of these inequality measures are, the more unequal the income distribution is. In Table 5, it is clearly shown that the income distribution became more unequal between 1994 and 1995 but had been improving until 1997. The onset of the crisis in 1997, however, aggravated income inequality.

The Gini coefficients calculated with the KHPS data are larger than those of Moon, Lee and Yoo (1999) and Kakwani (2000) where the Family Income and Expenditure (FIAE) survey was used. Their estimated Gini coefficients are around 0.29 in 1997 and 0.32 in 1998.<sup>5</sup>

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<sup>3</sup>See Kakwani (2000) for trends of recent income distribution of Korea.

<sup>4</sup>See Barro and Sala-i-Martin (1995).

<sup>5</sup>This difference in values can be due to the difference in the household's characteristics and region covered by the two surveys. And while this paper measures the Gini coefficient of per capita



Table 5: Per capita Income Inequality

	1994	1995	1996	1997	1998
Gini Coefficients	0.3808	0.4234	0.4240	0.4175	0.4313
Theil Index	0.2637	0.3362	0.3474	0.3181	0.3573
CV	0.8623	1.0440	1.0829	0.9888	1.1573
SD (log)	0.7879	0.8422	0.8425	0.8235	0.8749

Table 6 shows the average per capita household income by decile. Between 1996 and 1997, the per capita income of groups in bottom 20, 30, and top 10 percent deciles dropped while during the financial crisis, the per capita income of low-income groups dropped more than that of high-income groups. For instance, the income of the poorest 20 percent decile dropped by 60 percent.

Tables 5 and 6 suggest that the crisis in Korea led to a more unequal income distribution, indicating two key points. First, the intense worsening of per capita income distribution happened in 1994-1995. Second, while the income distribution had been improving until the financial crisis hit the country, the crisis led to more unequal income distribution than that of 1994.

In addition to the results shown by Tables 5 and 6, transition matrices of Table 7 show how the per capita income of households changed over the period 1996-1998. Due to missing data, only 1879 households in 1996-1997 and 1897 households in 1997-1998 out of balanced 1978 households are considered. Column I represents the lowest quartile (the poorest 20 percent) while column V represents the highest quartile (the richest 20 percent). Households along the diagonal were household which remained in the same quartile over the period. In 1996-1997, 44.2 percent (830 households) income, Kakwani (2000) used the per capita welfare, which is defined as the ratio of per capita total expenditure of a household to the per capita poverty line of that household, and Moon, Lee, and Yoo (1999) used household income rather than per capita household income.

Table 6: Average Per capita Income by Decile

Percentile of income	1996	1997	1998	%change 96-97	%change 97-98
10	122.07	131.24	89.82	7.5	-31.6
20	261.11	250.27	187.82	-4.2	-60.0
30	358.62	362.46	262.72	-3.8	-27.5
40	446.42	451.45	335.83	1.1	-25.6
50	530.68	545.13	404.66	2.7	-25.8
60	610.75	641.53	484.34	5.0	-24.5
70	720.61	761.05	570.78	5.6	-25.0
80	871.18	934.30	707.45	7.3	-24.3
90	1178.26	1235.32	945.46	4.8	-23.5
100	2519.91	2453.66	1930.91	-2.6	-21.3

remained in the same original quartiles, 27.5 percent (515 households) moved to higher quartiles and the remaining 29.3 percent (550 households) moved to lower quartiles. While in 1997-1998, 41 percent (778 households) remained in their original quartiles, 31.3 percent (594 households) moved to higher quartiles and the remaining 27.7 percent (525 households) moved to lower quartiles. Based on these results, the number of households that moved to higher quartiles is larger in 1997-1998 than in 1996-1997 indicating greater income inequality.

### 3 The Impact on Inequality by Income Sources

In this section, the impact of income sources - labor, asset, and other income - is investigated. Tables 8 and 9 show the trends of labor and asset income changes, respectively. The labor income of low income groups dropped more than that of high income groups. In 1996-1997, while the income of the poorest 30 percent and the richest 10 percent decreased, that of other groups increased. During the financial crisis, on the other hand, the labor income of all income groups dropped. The labor

Table 7: Transition Matrix of Per capita Income: 1996-1998

		1997					Total
		I	II	III	IV	V	
1996	I	224	93	30	20	15	382
	II	77	140	77	47	34	375
	III	39	86	122	77	54	378
	IV	19	46	99	142	68	374
	V	14	15	48	91	202	370
Total		373	380	376	377	373	1879

  

		1998					Total
		I	II	III	IV	V	
1997	I	224	99	26	18	15	382
	II	72	138	94	55	21	380
	III	31	66	120	100	62	379
	IV	28	44	80	121	104	377
	V	25	36	64	79	175	379
Total		380	383	384	373	377	1897

income of the poorest 10 to 40 percent decreased, on average, by 30 percent while that of the richest 10 to 40 percent decreased, on average, only by 21 percent. The crisis, therefore, increased labor income inequality.

On the other hand, high-income groups, compared with low-income groups, experienced more loss in their asset income in 1998. For instance, the richest 30 percent, which gained asset income except the richest 10 percent in 1997, lost almost half of their asset income in 1998. The percentage of asset income loss by low-income groups was less than that of high-income groups suggesting that the crisis, in a way, contributed in improving income inequality.

Table 10 also shows per capita other income to increase for low-income and high-income groups and decrease for middle-income groups during the crisis. Furthermore, the richest 10 percent occupied the largest percentage of the total other income. As defined in Table 3, other income is mostly constituted of financial securities. This

Table 8: Average Per capita Labor Income by Decile

Percentile of income	1996	1997	1998	%change 96-97	%change 97-98
10	84.85	77.61	52.85	-8.5	-31.9
20	198.54	189.59	139.36	-4.5	-26.5
30	318.07	309.40	213.36	-2.7	-31.0
40	390.05	413.14	274.35	5.9	-33.6
50	477.52	499.71	354.31	4.7	-29.1
60	540.99	559.93	432.64	3.5	-22.7
70	646.74	659.86	484.58	2.0	-26.6
80	732.80	744.46	578.32	1.6	-22.3
90	829.91	889.42	667.27	7.2	-25.0
100	1047.09	948.80	869.36	-9.4	-8.4

Table 9: Average Per capita Asset Income by Decile

Percentile of income	1996	1997	1998	%change 96-97	%change 97-98
10	5.11	7.60	6.62	48.7	-12.9
20	12.06	10.60	8.40	-12.1	-20.8
30	10.84	17.02	12.88	57.0	-24.3
40	16.48	11.21	16.74	-32.0	49.0
50	20.43	12.68	14.76	-37.9	16.4
60	32.23	29.85	17.91	-7.4	-40.0
70	36.45	48.27	37.42	32.4	-22.5
80	68.15	92.70	45.55	36.0	-50.9
90	202.88	222.34	105.56	9.6	-52.5
100	1015.33	966.85	554.91	-4.8	-42.6

brings us to a conclusion that the rich, who are expected to possess more financial securities, were seriously affected by the collapse of the financial market in 1998.

## 4 Transfer Income as a Social Safety Net

One of the main concerns of this paper is the role of public transfer income as a social safety net device during financial crisis. As Table 11 shows, the observed trend of public transfer income is contrast to our expectation. The rich- income

Table 10: Average Per capita Other Income by Decile

Percentile of income	1996	1997	1998	%change 96-97	%change 97-98
10	0.92	1.72	1.99	87.0	15.7
20	1.82	3.34	4.32	83.5	29.3
30	1.94	4.51	5.68	132.5	25.9
40	8.26	6.11	8.57	-26.0	40.3
50	10.48	14.18	13.49	36.3	-4.9
60	15.54	30.99	17.66	99.4	-43.0
70	27.54	34.53	23.54	25.4	-31.8
80	53.40	75.15	63.00	40.7	-16.2
90	120.62	95.63	133.27	-20.7	39.4
100	265.11	292.61	399.73	10.4	36.6

Table 11: Average Per capita Public Transfer Income by Decile

Percentile of income	1996	1997	1998	%change 96-97	%change 97-98
10	8.45	10.15	7.88	20.1	-22.4
20	8.98	5.87	5.29	-34.6	-9.9
30	6.10	7.48	2.39	22.6	-68.1
40	5.66	5.01	8.17	-11.5	63.1
50	4.89	4.00	4.41	-18.2	10.3
60	3.62	9.55	4.81	163.8	-49.6
70	1.79	5.14	6.55	187.2	27.4
80	9.18	5.67	11.43	-38.2	101.6
90	9.00	2.85	22.97	-68.3	706.0
100	6.76	8.98	9.63	32.8	7.2

groups received more public transfer income, compared with low-income groups. For instance, the public transfer income of the richest 10 to 30 percent increased, on average, by 271 percent while that of the poorest 10 to 30 percent decreased, on average, by 33 percent in 1998. This suggests that the public transfer income did not contribute in reducing the income inequality during the crisis. This is because of the fact that the public transfer income is consisted predominantly of pension, and not of public assistance. This implies that the safety net programs were not yet in place during the initial period of the crisis.

Table 12: Average Per capita Private Transfer Income by Decile

Percentile of income	1996	1997	1998	%change 96-97	%change 97-98
10	22.72	34.17	20.48	50.4	-40.1
20	39.71	40.88	30.44	3.0	-100.0
30	21.67	24.05	28.40	11.0	18.1
40	25.97	15.99	28.00	-38.4	75.1
50	17.35	14.57	17.69	-16.0	21.4
60	18.37	11.21	11.33	-39.0	1.1
70	8.09	13.25	18.69	63.8	41.1
80	7.65	16.32	9.15	113.3	-43.9
90	15.86	25.08	16.39	58.1	-34.7
100	16.36	32.55	30.37	99.0	-6.7

On the other hand, the trend of private transfer income in Table 12 shows an opposite implications. It is clearly shown that the low-income groups received relatively large amount of private transfer income. For instance, in 1998, the poorest 40 percent received about 268 thousand Korean won whereas the richest 40 percentage group received 187 thousand Korean won. The amount high-income groups is lower than that of low-income groups except the richest 10 percent group. This confirms that the private transfer among households plays a significant role in reducing income gap.

Cox (1987) suggests two different motivations for private transfer - altruism and exchange in a quid pro quo basis. With the exchange motive, it is possible for a positive relationship to exist between the recipient's income and transfer amounts. The altruism motive, on the other hand, predicts that this relationship will always be negative. Kang (2001) presents estimation results from panel binary response model (probit and logit) for receiving private transfer; the dependent variable takes one if a household receives private transfer and zero otherwise. He comes up with two conclusions. First, pre-transfer income has a positive relation with the probability of

receiving private transfer income suggesting the private transfer in Korea are largely motivated by altruistic behavior. Second, the public transfer income is negatively correlated with the private transfer income, which implies that the public transfer income crowds out the private transfer income. Furthermore, the panel analysis by Guo, Kang and Sawada (2001) support the role of private transfer income as one of the coping devices for decreasing per capita household expenditure.<sup>6</sup>

An examination of Table 13 indicates the role of each public transfer category. The first three columns represent public transfer income in terms of pensions: National is national pension, Civil servant is the private schools, civil servants, or military pension, and Veterans is the veterans' pension. The fourth column, Insurance, is the transfer income from employment insurances and the fifth column, Support, is support from the government or social organizations. The last column shows the values of per capita public transfer income by decile which are the same with the

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<sup>6</sup>As discussed in the introduction, the Korean government was not well prepared in the beginning of the crisis. This is reflected in the empirical results of this paper as well. After the crisis started, the government started to allocate larger budget into the social safety net. Even though this data is from Aug. 1997 to Jun. 1998, the impact of these government social safety net programs might not be reflected in the initial wave of the KHPS. The Korean government responded to the sharp increase in unemployment by putting forth a comprehensive unemployment benefits package in March 1998, which was agreed upon in the Tripartite Commission composed of businessmen, union leaders and public officials. The package includes an expanded unemployment insurance system, subsidized loan programs for the unemployed and venture businesses, active labor market policies, public work programs and others, among which the expansion of unemployment insurance and public work programs appear to have had the strongest potential for real impact. In 1998, the Korean government allocated a budget of 3,625 billion won, i.e., 1.3 percent of the GDP, for social safety net and unemployment-related expenditures. As the recession deepened, the government further increased 1999 budget allocations for social programs by 34.3 percent compared to the previous year. See Moon, Lee and Yoo (1999).

Table 13: Average Per capita Public Transfer Income by Categories and by Decile (1998)

Percentile of income	National	Civil Servant	Veterans	Insurance	Support	Total
10	0.10	0.00	0.65	0.16	6.98	7.88
20	0.00	0.00	0.00	0.00	5.29	5.29
30	0.08	0.00	0.77	0.00	1.54	2.39
40	0.88	1.08	4.41	0.00	1.80	8.17
50	0.61	0.23	2.82	0.00	0.75	4.41
60	2.61	0.00	1.71	0.36	0.13	4.81
70	1.62	3.17	1.19	0.00	0.57	6.55
80	1.02	7.00	3.04	0.26	0.10	11.43
90	0.08	9.66	8.92	0.00	4.32	22.97
100	3.10	5.07	0.79	0.53	0.10	9.63
Mean	1.03	2.64	2.42	0.13	2.14	8.37

values shown in Table 12 and the last row gives the mean of public transfer income in each category and of the total public transfer income.

As Table 13 shows, high-income groups received larger income from pensions. In addition, the support from the government or social organizations, as expected, played a positive role in reducing income inequality, except among the richest 10 percent, and was therefore an effective social safety net device. Public transfer income from insurances, on the other hand, can be ignored as a coping device since its amount is negligible. Based on the values presented, it can be said that most of the public transfer income served as sources of extra income rather than as safety net devices.

## 5 Conclusion

Using 5-year balanced household panel data, this paper shows that the burden of the economic crisis was not shared equally by the poor and the rich in Korea. All of the income inequality measures increased during the economic crisis, suggesting



that the income inequality in the country had worsened. In order to explore the impact of different income sources on income inequality, this paper divided the total income into 4 categories- labor, asset, transfer, and other income. Labor income of low-income groups dropped more than that of high-income groups. Asset income of high-income groups, however, dropped more. Other income of low-income groups increased but that of high-income groups decreased. What is more interesting is the trend of transfer income. The rich received more public transfer income.

Although the private transfer income was an effective social safety net device, the public transfer income was not and did not contribute in improving income inequality. This is because public transfer income consisted predominantly of pension and not of public assistance, and because social safety net programs were not yet in place in the first period of the crisis. After the onset of the crisis, however, the government expanded the social safety net programs, which included an expanded unemployment system, subsidized loan programs for the unemployed and venture businesses, active labor market policies, public work programs and others. With these ongoing policies, the World Bank (2000) indicates that the negative impact of the crisis on households' welfare was smaller than was originally expected because the sensible responses of households and the government played an important role in combating the crisis. The KHPS data used in this paper, however, does not cover the effect of government policies implemented just after the crisis. Hence, the impact of these policies on income distribution is not reflected in the analysis.

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