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KOREA'S PRO_POOR ECONOMIC GROWTH

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Abstract

President Kim Dae Jung has articulated productive welfare as an ideology, as well as a policy, that seeks to secure minimum standard of living for all people. The theme of this paper is pro-poor growth, which is somewhat consistent with the idea of productive welfare in the sense that the people, who do not enjoy the socially accepted minimum standard of living, should be able to share the benefits of economic growth proportionally more or at least no less than the rest of the society. This paper attempts to answer the questions: Is economic growth in Korea pro-poor? And if so, what is its degree? How does Korea compare with Thailand in terms of its degree of pro-poorness? The paper also develops a regression model that can be used to forecast the incidence of poverty on the basis of information on growth rate per capita GDP and unemployment rate.

1. Introduction

Until the financial crisis in 1997, the Korean economy had been perceived as one of the fastest growing economies in the South East Asia. Its growth of per capita real GDP surpassed an annual rate of more than 5 percent during the period of 1990-97. Along with high economic growth, Korea is also known as the economy with relatively equal distribution of income and with full employment. Before 1997, inequality had declined gradually, while the rate of unemployment had been only 2-3 percent. This seemingly sound economic outlook was shattered by the financial crisis in 1997, which emulated to the economic crisis throughout 1998.

The adverse effect of the crisis had been widespread throughout the economy. The unprecedented rate of economic growth for the past three decades turned into negative: per capita real GDP declined at the rate of 7.6 percent in 1998. Unemployment surged to 6.8 percent in the same year. As the economy slowed down substantially, unemployment rate increased and many people were pushed into the trap of poverty. The incidence of poverty jumped dramatically from 8.6 percent in 1997 to 19 percent in 1998. Coupled with poverty, the crisis also precipitated worsening inequality in the society.

In some sense the economic crisis has been a blessing in disguise. Prior to the crisis, the government of Korea gave a high priority to economic growth that was deemed to enhance welfare of the people. In order to accomplish this objective, the

government emphasized the importance of macro policy management such as stable low inflation and promoting domestic and foreign investment. This emphasis seems to be shifting towards achieving a more equitable economic growth that would benefit all Koreans.

President Kim has proposed a policy called productive "welfarism". He defines productive welfare as "an ideology, as well as a policy, that seeks to secure minimum living standards for all people, while expanding opportunities for self-support in socio-economic activities for the purpose of maintaining human dignity" (Chapter 3, Kim 2001).

A major focus of productive welfare lies on enhancing the people's standard of living through aspiring both equity and efficiency objectives. An equity objective or an equitable distribution of wealth establishes a basic framework that ensures that every individual in the society is able to enjoy his or her minimum level of standard of living. Equally important, this minimum standard of living can be sustained or uplifted by means of stable economic growth that generates employment opportunities and constant income sources. In this respect, productive welfare puts an equal importance to both growth and equity. More importantly, productive welfare can make a significant contribution to mitigating the adverse effect of the crisis and thus to strengthening social integration. Further, the idea of productive welfare is somewhat consistent with the theme of our paper, pro-poor growth, in the sense that the ultimate goal of productive welfare is to achieve a society, of which the disadvantaged group of people can share the benefits of economic growth proportionally more than or at least no less than their counterpart.

The prime objective of this study is to know whether the Korean economic growth has (or has not) been pro-poor for the last decade. A view held widely in development economics is that the benefits of rapid economic growth rates diffuse automatically across all segments of society. This trickle-down theory implies

that the rich become richer and after a while the poor also will benefit from the increased wealth in society. In this view, the poor tend to benefit indirectly from economic growth. The benefits of economic growth accruing to the poor are likely to be proportionally less than the benefits accruing to the rich. However, by the early 1970s this trickle-down myth had proven to be insufficient for presenting ways to reduce poverty. Today pro-poor growth, advocating proportionally more benefits to the poor than to the rich, is becoming a major factor in poverty reduction strategies of the international development organizations (See Asian Development Bank's Poverty Reduction Strategy).

This paper attempts to answer the questions: Is economic growth in Korea pro-poor? And if so, what is its degree? How does Korea compare with Thailand in terms of its degree of pro-poorness? The paper also develops a regression model that can be used to forecast the incidence of poverty on the basis of information on growth rate per capita GDP and unemployment rate.

The paper is organized in the following manner. Section 2 looks into the relationship between economic growth, measured in per capita real GDP and standard of living. Sections 3 and 4 delineate changes in inequality and poverty in the 1990s, respectively. The next section, Section 5, defines pro-poor growth and develops an index that would measure the degree of pro-poor growth. Section 6 presents empirical analysis of the nature of economic growth in Korea using the family income and expenditure surveys covering the period from 1990 to 2000. And Section 7 presents a regression model that explains the incidence poverty in terms of macroeconomic indicators. This model is then used to forecast the incidence of poverty in the 2nd quarter of 2000 to 1st quarter of 2001. Finally, Section 8 gives some concluding remarks.

2. GDP Growth and Average Standard of Living

The growth rate of per capita Gross Domestic Product (GDP) growth is commonly used to evaluate a country's economic performance. It is true that GDP per capita is an important determinant of welfare on the grounds that the levels of consumption or our demands for goods and services are closely related to the economy's output capacity. It does not necessarily imply, nevertheless, that a high growth in per capita GDP means higher welfare. A conventional measure of GDP excludes many factors that contribute to economic welfare while incorporating other factors that have adverse effects on welfare. More importantly, aggregate output measures are completely insensitive to the distribution of welfare among individuals in the society. As such, GDP per capita should be used as an indirect measure of people's standard of living.

Economic welfare can be directly measured by utilizing household surveys that in general provide information on households' incomes and consumption expenditures. There are two approaches to the measurement of individual welfare. One approach is based on income, deemed the major resource for each individual to consume goods and services in the market economy. The other approach is related to the standard of living, measured by current consumption expenditure. If economic welfare is viewed as an indicator of the standard of living, consumption enjoyed by the people in the current period will be a better

measure of individual welfare. Moreover, as advocated by the permanent income hypothesis, consumption tends to exhibit a stable trend over time through savings and borrowings.

In measuring economic welfare, it is important to take into account different needs of each individual belonging to a household. Since households vary according to their size and composition, their needs are expected to be different. Hence, the measurement of individual welfare should reflect different needs of individuals.

Suppose that χ_i is the per capita income (or consumption expenditure) of the ith household and z_i is the household specific poverty line, which was obtained from the minimum cost of living study conducted in 1994 by the Korean Institute of Health and Social Affairs as given in Bark (1994). Kakwani and Prescott (1999) have updated the poverty line estimates on the basis of appropriate consumer price indices for different years. Then, it is possible to define the welfare of the ith household as $y_i = 100 \times \frac{(x_i)}{(z_i)}$, which takes any value greater than zero. This measure of welfare can be interpreted as the percentage of excess income (or expenditure) the ith household has over its poverty line. If y_i is less than 100, then the ith household is identified as poor, and zero, otherwise.

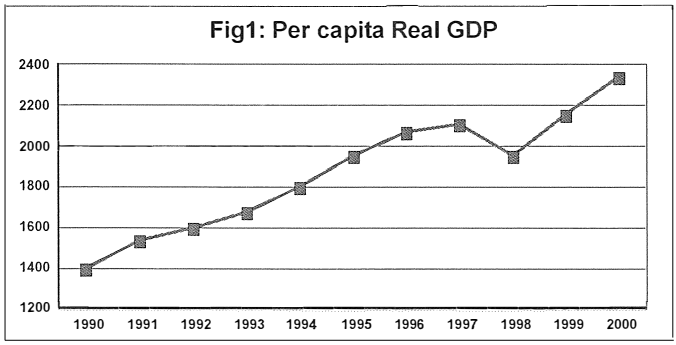
Table 1 presents three alternative measures of average standard of living covering the period from 1990 to 2000. The per capita real GDP was estimated using the Korean National Accounts data in conjunction with the population projections. The second measure is the per capita household real expenditure, which was estimated from the Korea's Family Income and Expenditure Surveys (FIES), which are conducted quarterly every year. The yearly figures of per capita household real expenditures were calculated as the average of four quarters in every year. The real expenditure from each quarterly survey was estimated by adding the real expenditure on ten items of consumption which included food; housing; clothing and footwear; furniture and

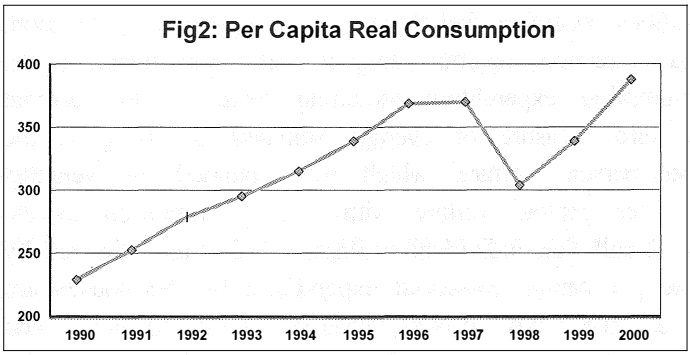
utensils; utilities including fuel, light and water charges; education; culture and recreation; health; transport and communication; and other consumption expenditure including tobacco and personal care. The third measure of average standard of living is the average per person welfare, which was obtained by weighted average of per person welfare with weight proportion to the population. Recall that individual welfare, which was estimated by dividing the per capita household expenditure by the household's poverty line, takes into account different household needs and therefore is a better measure of average welfare than the per capita real expenditure.

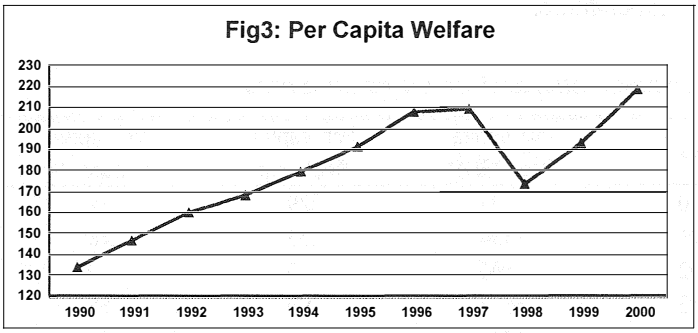
Table 1: Average Standard of Living in Korea

Year	Per capita Real GDP	Per capita Real exp	Per capita Welfare %
1990	1394	229	134
1991	1534	253	146
1992	1596	279	160
1993	1675	296	168
1994	1801	316	180
1995	1955	339	191
1996	2072	369	208
1997	2109	371	209
1998	1955	304	173
1999	2157	340	193
2000	2345	388*	218*

*Estimated from the regression model







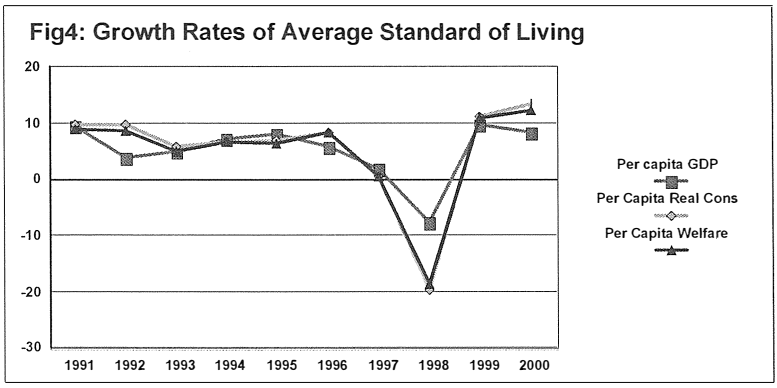
All these three measures tell us that people's standard of living had been improving rapidly during the period between 1990 and 1996. It is interesting to note that there was a sign of slowdown in 1996-97 before the economic crisis actually started. While both real consumption and welfare per capita have virtually become steady during 1996-97, real GDP per capita increased relatively by a larger magnitude. In the crisis period, 1997-98, all the three measures show a substantial fall in the average standard of living although the fall in per capita real GDP is much less than in the other two measures of standard of living. During the post-crisis period, all measures indicate that people's standard of living started to improve but at different degree. In 1999, GDP per capita recovered and even exceeded its pre-crisis period, whereas real consumption and welfare per capita were still far below compared to their pre-crisis levels. Based on indicators

including high unemployment and worsened inequality and poverty, it seems that people's living standards have not been fully restored at the pre-crisis level.

Table 2: Growth rates of per capita standard of living: Korea

Year	Per capita Real GDP	Per capita Real exp	Per capita Welfare %
1991	9.6	9.8	8.9
1992	4.0	9.8	8.7
1993	4.8	5.8	5.0
1994	7.3	6.7	6.7
1995	8.2	7.1	6.4
1996	5.8	8.4	8.3
1997	1.8	0.5	0.5
1998	-7.6	-19.8	-18.7
1999	9.8	11.0	10.8
2000	8.4	13.4*	12.2*

* Estimated from the regression model.



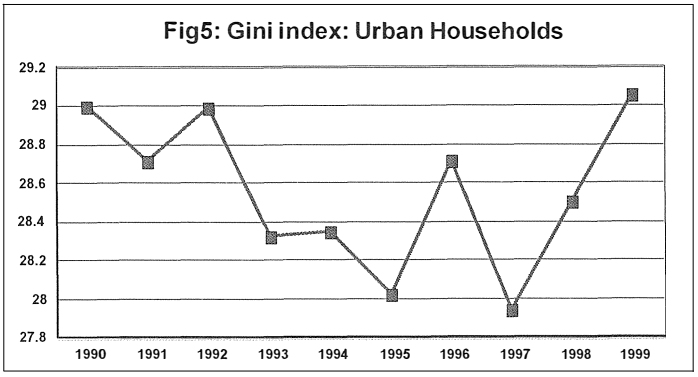
3. Inequality in Korea

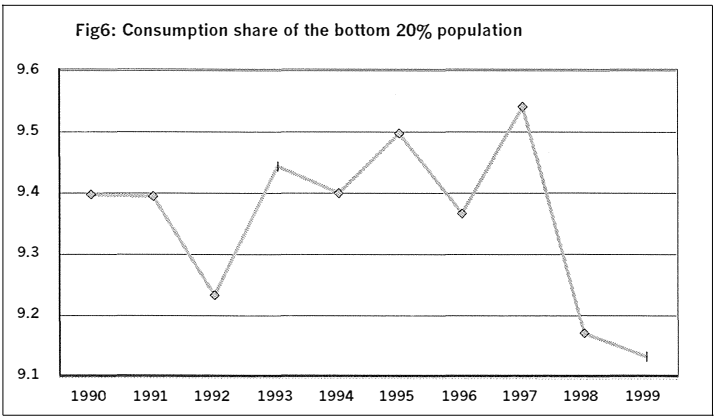
Concerning with income inequality in Korea, there have been numerous studies that have produced widely conflicting conclusions. The major problem underlying this inconsistency in their results is due mainly to the non-availability of data on incomes for non-wage and non-salary earners. Many researchers have attempted to estimate the income of employer and self-employed household heads but these attempts have lead to conflicting results because of the different assumptions made by them. In our study, per capita consumption expenditure is utilized to compute inequality in the 1990s.

In our study, we use Gini index to estimate inequality. The Gini index is the most commonly used method of measuring inequality. As shown in Table 3 and Figure 5, inequality in Korea had been gradually declining until 1997. Since 1997, inequality has continued to increase sharply, with the Gini index reaching a highest level at 29.1 percent in 1999. In 1999, as indicated in Figure 6, the share of the bottom 20 percent of population has been declining until 1997 and since then has been increasing. It means that the economic crisis hurt the poor proportionally more than the rich.

Table 3: Gini index and quintile shares

Year	Gini	Quintile1	Quintile2	Quintile3	Quintile4	Quintile5
1990	29.0	9.4	13.4	16.8	21.6	38.8
1991	28.7	9.4	13.5	17.0	21.7	38.4
1992	29.0	9.2	13.5	17.0	21.6	38.7
1993	28.3	9.4	13.6	17.1	21.8	38.1
1994	28.3	9.4	13.6	17.2	21.7	38.1
1995	28.0	9.5	13.6	17.2	21.9	37.8
1996	28.7	9.4	13.5	17.0	21.7	38.5
1997	27.9	9.5	13.7	17.2	21.7	37.8
1998	28.5	9.2	13.6	17.2	22.0	38.0
1999	29.1	9.1	13.4	17.1	21.9	38.5





4. Incidence of Poverty in Korea

The present study utilized the Minimum Cost of Living (MCL) basket developed in 1994 by the Korean Institute for Health and Social Affairs (KIHASA) as the poverty line. Kakwani and Prscott (2000) modified this poverty line in order to take account of different costs of living between Seoul and other cities. The poverty line was updated for other years using the separate consumer price indices for Seoul and other cities.

It must be emphasized that we have used Korean specific poverty line, which measures the minimum acceptable standard of living in Korea. Therefore, the incidence of poverty computed here cannot be compared with the incidence of poverty in other countries. Our main objective here is to analyze changes in poverty and how it has been affected by the economic growth in Korea.

We estimate poverty based on consumption. We compute the three most widely used poverty measures, namely, head count ratio, poverty gap ratio, and Foster-Greer-Thorbecke (1984) index. While the head count ratio simply computes the percentage of poor living below the poverty line, the other two measures calculate the depth and the severity of poverty after taking into account the distribution of consumption among the poor.

As presented in Table 5, poverty declined sharply between 1990 and 1997. For instance, the percentage of poor dropped dramatically from 39.6 percent in 1990 to 8.6 percent in 1997. The crisis, however, pushed a number of people down to poverty

and led to 19 and 13.4 percent of poor in 1998 and 1999, respectively. Although the head count ratio improved substantially in 1999, it was far higher than its pre-crisis level.

Table 5: Poverty incidence: Korea

Year	Actual incidence			Annual Growth rate		
	Percentage of poor	Poverty gap ratio	Severity of pov index	Percentage of poor	Poverty gap ratio	Severity of pov index
1990	39.6	9.6	3.4	-	-	-
1991	31.3	7.1	2.4	-23.4	-30.5	-33.9
1992	24.5	5.4	1.8	-24.7	-27.9	-31.2
1993	20.5	4.2	1.3	-17.7	-25.0	-29.0
1994	16.5	3.2	1.0	-21.5	-25.5	-29.7
1995	12.7	2.4	0.7	-26.7	-29.8	-31.3
1996	9.6	1.8	0.5	-27.5	-30.0	-30.0
1997	8.6	1.6	0.5	-10.7	-11.2	-14.1
1998	19.0	4.2	1.5	78.8	97.2	115.3
1999	13.4	2.7	0.9	-34.7	-42.5	-50.1
2000	8.38*	1.48*	0.44*	-47.2	-62.0	-70.9

* Estimated from the regression model.

Since we did not have the survey data for the year 2000, we estimated the poverty incidence for 2000 using the regression model, presented in Section 7. Given the quarterly growth and unemployment rates, we estimated the percentage of poor in the year 2000 as 8.38 percent, which is lower than its pre-crisis level. Similarly, the poverty gap ratio and severity of poverty index were estimated to be 1.48 and 0.44, respectively. Thus, we can say that the incidence of poverty in Korea is now lower than its pr-crisis level.

It is noteworthy that the rate of reduction in poverty slowed down considerably during the 1996-97 period, when the percentage of poor reduced by only 10.7 percent compared to a reduction of 27.5 percent in the previous year. The same story emerges from the other two poverty measures. These results suggest that there did exist signs of forthcoming crisis one year earlier, which were not picked up in time.

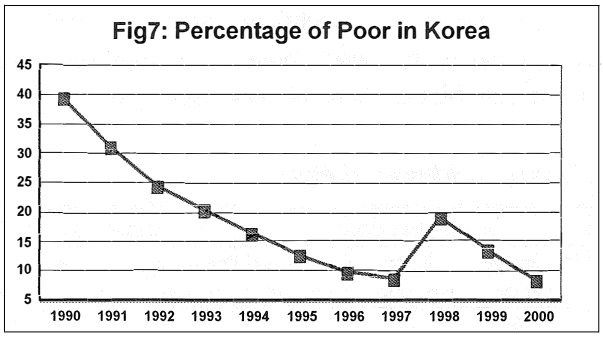


Fig7: Percentage of Poor in Korea
45
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5. What is pro-poor growth?

The relationship between economic growth and poverty has been studied extensively. A large amount of cross-country evidence suggests that growth and poverty reduction are strongly positively correlated. The countries that have experienced high growth over a sustained period have made a greater reduction in poverty. This result is consistent with the trickle down theory that some benefits of growth will always "trickle down" to the poor. Thus, the incidence of poverty can diminish with growth even if the poor receive only a small fraction of the total benefits.

Pro-poor growth requires a strategy that is deliberately biased in favor of the poor so that the poor benefit proportionally more than the rich. Such an outcome would rapidly reduce the incidence of poverty. The trickle-down development also reduces poverty but the rate of poverty reduction may be much slower. It is the slowness of poverty reduction that has generated interest in the concept of "pro-poor growth".

The degree of poverty depends on two factors: average income and income inequality. The increase in average income reduces poverty and the increase in inequality increases it. Economic growth increases average income (or consumption), but at the same time an increasing or decreasing inequality may accompany it. An increase (decrease) in inequality implies that the proportional benefits received by the poor are less (more) than those by the non-poor. Thus, growth is pro-poor when it is accompanied by a reduction in inequality.

To make the concept of pro-poor growth operational, we need to choose a measure of inequality. The Gini index is a widely used measure of inequality. Unfortunately, there exists no monotonic relationship between changes in the Gini index and poverty reduction. With mean income remaining the same, an increase or a decrease in the Gini index can still leave poverty unchanged. Similarly, poverty can increase or decrease without any change in either mean income or the Gini index. Thus, changes in the Gini index cannot always tell whether or not growth has been pro-poor. As a matter of fact, none of single measures of inequality proposed in the literature can be used to measure the degree of pro-poor growth.

The Lorenz curve is widely used to analyze inequality in the size distribution of income. It can be easily established that there is a monotonic relationship between changes in the Lorenz curve and poverty reduction. If the entire Lorenz curve shifts towards the egalitarian line, then poverty will always reduce even if the mean income does not change. Thus, the Lorenz curve provides a criterion for measuring the degree of pro-poor growth. Growth is pro-poor if the entire Lorenz curve shifts towards the egalitarian line. The major difficulty with the Lorenz curve is that it may not provide an unambiguous measure of pro-poorness of growth. In practice, we may have a situation, when we cannot say whether growth has been pro-poor.

Kakwani and Pernia (2000) have developed an index of pro-poor growth, which is tailored to any specific poverty measure. It is based on a decomposition of total change in poverty into (i) the impact of growth when the distribution of income does not change, and (ii) the impact of income redistribution when total income does not change.

Suppose η his the poverty elasticity with respect to growth, which is defined as the proportional change in poverty when there is a positive growth rate of 1 percent. η can be decomposed into two components, η_g and η_I such that[1)]

$$\eta = \eta g + \eta_I \qquad (1)$$

where η_g is the pure growth effect and η_I is the inequality effect. η_g is the proportional change in poverty when the distribution of income does not change, whereas η_I is the proportional change in poverty when inequality changes in the absence of growth. η_g will always be negative, when growth rate is positive because positive growth always reduces poverty, with distribution remaining constant. η_I can be either negative or positive depending on whether change in inequality accompanying growth reduces or increases poverty. Growth will obviously be pro-poor if η_I is negative. Thus the degree of pro-poor growth can be measured by an index

$$\phi = \eta / \eta_g \qquad (2)$$

ϕ will be greater than 1 whe $\eta_I<0$. Thus, growth will be pro-poor when $\phi>1$, meaning that the poor benefit proportionally more than the non-poor, i.e., growth results in a redistribution in favor of the poor. This would be the first-best outcome. When $0<\phi<1$, growth is not strictly pro-poor (i.e., growth results in a redistribution against the poor) even though it still reduces poverty incidence. This situation may be generally characterized as 'trickle-down' growth. If $\phi<0$, economic growth actually leads to an increase in poverty. This situation may be characterized as 'immiserizing' growth (Bhagwati 1988).

During a recession, the observed growth rate is negative, resulting in an increase in the incidence of poverty, which means that η is positive and so is η_g. If there were no income redistribution due to recession, the incidence of poverty would increase by η_g percent (due to a 1 percent decline in the growth rate), whereas the actual increase in poverty is η percent. Thus, the recession will be pro-poor if $\eta<\eta_g$ and pro-rich if $\eta>\eta_g$. This implies that the recession will be pro-poor if $\phi<1$ and

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1) For details see Kakwani (2000).

pro-rich if $\phi>1$.

Index ϕ measures how the benefits of growth are distributed across the population. Suppose g is the growth rate and θ is a poverty measure, the proportional change in poverty may be written as

$$\frac{(\triangle \theta)}{\theta} = f(g, \phi) \qquad (3)$$

which implies that there are two factors that determine a country's performance in poverty reduction. First is the growth rate g, which affects the mean income of society and second factor relates to the distribution of benefits of economic growth, which is measured by the pro-poor index ϕ. Obviously, the growth rate alone is not sufficient to achieve a maximum reduction in poverty. It may, of course, be necessary.

To determine $f(g, \phi)$, we introduce the idea of poverty equivalent g* growth rate g* which is defined as the growth rate that will result in the same level of proportional poverty reduction as the present growth rate with no change in income inequality, i.e. when everyone receives the same proportional benefits of growth. It is obvious that g* will be given by

$$f(g^*, 1) = f(g, \phi) \qquad (4)$$

noting that $\phi=1$, when everyone receives the same proportional benefits. From (1), we write

$$\frac{(\triangle \theta)}{\theta} = f(g, \phi) = g\eta \qquad (4)$$

and

$$f(g^*, 1) = \eta_g g^*$$

which in view of (4) immediately gives

$$g^* = g\phi \qquad (5)$$

It is the poverty equivalent growth rate that controls for how equitable growth rate is. This suggests that the performance of a country should be judged on the basis of poverty equivalent growth rate and not by growth rate alone. Maximizing g* will be equivalent to maximizing the total proportional reduction in poverty.

For instance, if a country's growth rate is 9 percent and pro-poor index is 2/3, then its effective growth rate in terms of poverty reduction is only 6 percent. If the same country achieves its growth rate of 9 percent but the proportional benefits going to the poor are more than the non-poor, in which case, suppose ϕ is 1.2, then the effective growth rate will be 10.8.

Therefore, a rapid poverty reduction can be achieved by maximizing g* (or g ϕ) but not g alone.

6. Is Korean Economic Growth Pro-poor?

The results in Table 6 illustrate that economic growth in Korea has generally been highly pro-poor, as indicated by the pro-poor index with most of the values close to or greater than 1. It is noteworthy that in 1996-97 the index shot up to 5.1 for the headcount ratio. This is the period when economic growth began to slow down sharply but the incidence of poverty continued to fall markedly. This is because the distribution of consumption became more equal, contributing to a reduction of 4.8 percent in the percentage of poor. During the crisis in 1997-98, the pro-poor growth index for the headcount ratio was 1.2, suggesting that the poor were proportionally more adversely affected than the non-poor. What is more, the values of the pro-poor growth index for the poverty gap and severity of poverty were 1.3 and 1.4, respectively, implying that the ultra poor suffered proportionally even more during the crisis period.

Table6: Pro-poor growth index for Korea

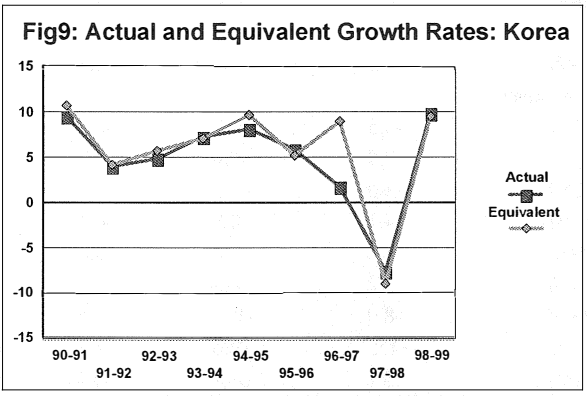
	Poverty Elasticity	Explained by Growth	Inequality	Pro-poor Index
Percentage of poor				
90-91	-2.4	-2.2	-0.3	1.1
91-92	-6.2	-6.0	-0.2	1.0
92-93	-3.7	-3.0	-0.6	1.2
93-94	-3.0	-3.0	0.0	1.0
94-95	-3.3	-2.7	-0.5	1.2
95-96	-4.7	-5.4	0.6	0.9
96-97	-6.0	-1.2	-4.8	5.1
97-98	-10.4	-8.7	-1.7	1.2
98-99	-3.5	-3.6	0.1	0.98
Poverty gap ratio				
90-91	-3.2	-2.9	-0.3	1.1
91-92	-7.0	-7.6	0.5	0.9
92-93	-5.2	-3.8	-1.4	1.4
93-94	-3.5	-3.5	0.0	1.0
94-95	-3.7	-3.1	-0.5	1.2
95-96	-5.2	-6.0	0.9	0.9
96-97	-6.3	-1.3	-5.0	4.7
97-98	-12.8	-9.7	-3.1	1.3
98-99	-4.3	-4.0	-0.3	1.07
Severity of poverty				
90-91	-3.5	-3.4	-0.2	1.0
91-92	-7.9	-8.6	0.7	0.9
92-93	-6.0	-4.2	-1.8	1.4
93-94	-4.1	-3.9	-0.1	1.0
94-95	-3.8	-3.5	-0.3	1.1
95-96	-5.2	-6.6	1.4	0.8
96-97	-8.0	-1.5	-6.5	5.4
97-98	-15.2	-10.6	-4.7	1.4
98-99	-5.1	-4.4	-0.7	1.17

Table 7 presents actual as well as poverty equivalent growth rates for Korea. Before the crisis, poverty equivalent growth rates were higher than actual growth rates for most of time period. In particular, the poverty equivalent growth rate of 9 percent in 1996-97 was far higher than the actual growth rate of 1.8 percent in that same period (Figure 8) suggesting that the poor benefited

proportionally much more than the rich, which resulted in a larger percentage reduction in poverty than what is indicated by the actual growth rate.

Table 7: Actual and Equivalent Growth Rates: Korea

Period	Actual growth rate	Equivalent growth rate		
		Percentage of poor	Poverty gap ratio	Severity of poverty ratio
90-91	9.6	10.7	10.4	10.0
91-92	4.0	4.1	3.7	3.6
92-93	4.8	5.8	6.6	6.8
93-94	7.3	7.2	7.3	7.5
94-95	8.2	9.7	9.5	8.9
95-96	5.8	5.1	5.0	4.6
96-97	1.8	9.0	8.3	9.6
97-98	-7.6	-9.0	-10.0	-10.9
98-99	9.8	9.6	10.5	11.5



After the crisis, actual growth rates have become higher than poverty equivalent growth rates. This implies that the poor have been more adversely affected by the crisis, and that even if there was a positive growth in 1998-99, its benefits did not go to the poor proportionally more than to the non-poor. If we measure poverty by the poverty gap ratio and severity of poverty index,

we find that the poverty equivalent growth rate in 1998-99 is higher than the actual growth rate, which suggests that the ultra-poor benefited more than the poor. This could have happened because in response to the economic crisis, the Korean government introduced many welfare programs including public works program, which might have helped the ultra poor more than the poor or the non-poor.

In comparison with Korea, we look at the case of Thailand. Thailand achieved remarkable economic growth over the two decades prior to the Asian financial crisis. The consequence was a rapid decline in the incidence of poverty. However, the pace of poverty reduction would have been much faster if income distribution had improved or at least not worsened (Table 8). For instance, had inequality stayed constant between 1988 and 1990, a 1 percent growth in the economy would have reduced the incidence of poverty by 3.25 percent or better, but the actual reduction in poverty was only around 1 percent. The corresponding value of the pro-poor growth index was about 0.3. Nevertheless, it is commendable that the pro-poor growth index increased markedly to 0.64 for the headcount ratio in 1994-96, the period before the crisis.

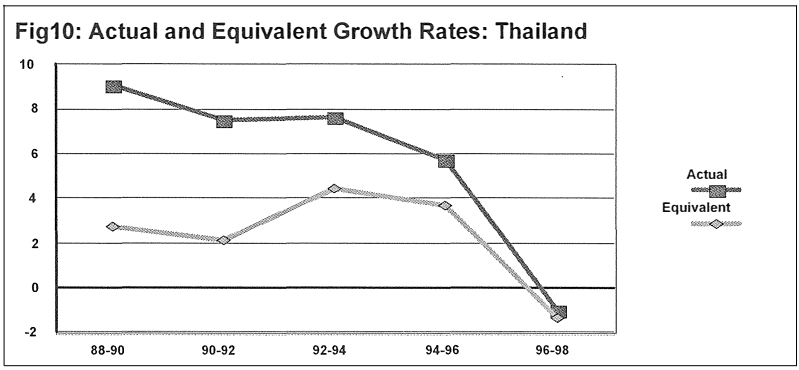
In the aftermath of the financial crisis that erupted in mid-1997, the high positive growth rates achieved by the Thai economy prior to 1996 reversed sharply into negative growth in 1998 (Table 9). Consequently, the monotonic improvement in the poverty incidence achieved until 1996 halted abruptly, and the number of poor increased from 11.4 percent of the total population in 1996 to about 13 percent in 1998. Did the economic crisis hurt the poor more than the non-poor? The results in Table 8 show that if the crisis were inequality-neutral, a 1 percent reduction in per capita income would have increased the percentage of poor by 4.74 percent, but the actual increase was 6.5 percent, which resulted in a pro-poor growth index of 1.37. Thus, the economic crisis adversely affected the poor proportionally more than the non-poor.

Table8: Growth and Inequality Components and pro-poor index: Thailand

	Poverty Elasticity	Explained by Growth	Inequality	Pro-poor index
Percentage of poor				
88-90	-0.99	-3.25	2.26	0.31
90-92	-1.08	-3.77	2.69	0.29
92-94	-2.29	-3.96	1.68	0.58
94-96	-3.12	-4.88	1.75	0.64
96-98	-6.50	-4.74	-1.76	1.37
Poverty gap ratio				
88-90	-1.46	-4.50	3.04	0.33
90-92	-1.10	-4.85	3.75	0.23
92-94	-2.97	-5.20	2.23	0.57
94-96	-3.61	-5.77	2.16	0.63
96-98	-7.59	-5.96	-1.63	1.27
Severity of poverty				
88-90	-1.77	-5.27	3.50	0.34
90-92	-1.12	-5.56	4.44	0.20
92-94	-3.38	-5.87	2.49	0.58
94-96	-4.04	-6.42	2.38	0.63
96-98	-8.38	-6.61	-1.77	1.27

Table 9: Actual and Equivalent Growth Rates: Thailand

Period	Actual growth rate	Equivalent growth rate		
		Percentage of poor	Poverty gap ratio	Severity of poverty ratio
88-90	9.1	2.8	2.9	3.0
90-92	7.5	2.1	1.7	1.5
92-94	7.7	4.4	4.4	4.4
94-96	5.7	3.7	3.6	3.6
96-98	-1.0	-1.4	-1.3	-1.3



Unlike Korea, economic growth in Thailand has not been pro-poor. This can be clearly seen in Table 9 and Figure 10. The poverty equivalent growth rates have always been lower than actual growth rates, implying that although Thailand achieved high economic growth in the 1990s, the benefits going to the poor were proportionally much less than to the non-poor. However, the difference between the two growth rates has become increasingly narrower over time indicating that the economic growth has become increasingly more pro-poor particularly in the period after 1996.

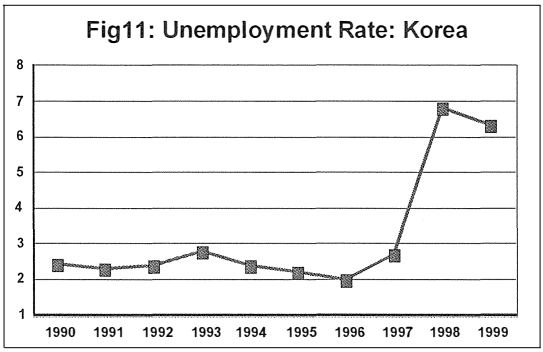
On the whole, both Korea and Thailand had high economic growth in the 1990s before the crisis. Nevertheless, the Korean economic growth generated proportionally more benefits to the poor than to the non-poor, whereas the Thai economic growth benefited the non-poor proportionately more the poor.

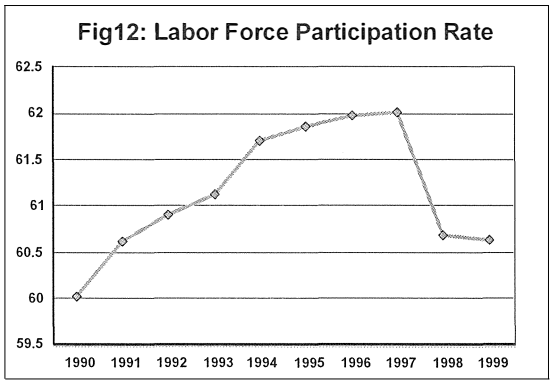
7. What determines poverty?

Due to the economic crisis, the growth rate of per capita GDP in 1998 became 7.6 and at the same time unemployment rate increased almost three fold from 2.7 percent in 1997 to 6.8 percent in 1998 (Table 10). If the labor force participation had not declined during the crisis period, the unemployment rate would have much worse. These adverse macroeconomic indicators reflected an immediate increase in the percentage of poor from 8.6 percent in 1997 to 19 percent in 1998. This section explores the question: To what degree the growth in per capita GDP and unemployment rate can explain the incidence of poverty?

Table 10: Unemployment and Labor Force Participation Rates

Year	Unemployment Rate	Labor force Parti rate
1990	2.4	60.0
1991	2.3	60.6
1992	2.4	60.9
1993	2.8	61.1
1994	2.4	61.7
1995	2.2	61.9
1996	2.0	62.0
1997	2.7	62.0
1998	6.8	60.7
1999	6.4	60.6
2000	4.1	NA





We propose a simple regression model in which the dependent variable is the logarithm of poverty incidence (log PI) and the explanatory variables include the log of per capita real GDP (*log(PCGDP)*), the log of the rate of unemployment (*log(u)*), and a quarterly dummy variables (*Di*) that capture seasonal effects. The proposed model is

$$\log(PI) = \alpha_0 + \alpha_1 \log(PCGDP) + \alpha_2 \log(u) + \beta \sum_{i=1}^{4} D_i + \varepsilon$$

Note that α_1 and α_2 measure elasticities of poverty with respect to per capita real GDP and unemployment rate, respectively. This model was estimated using 41 quarterly observations covering the period from 1st quarter 1990 to first quarter 2000. Since this is a fairly large sample and, therefore,

we can expect to get fairly accurate estimates of the model.

The results are presented in Table 11. As would be expected, poverty declines with a positive economic growth but it increases with a higher rate of unemployment. The growth elasticity of the headcount ratio is estimated to be -3.41 with the t value of 27 implying that economic growth has a highly significant impact on the incidence of poverty. The percentage of poor will on average decline by 3.41 percent in response to a 1 percent increase in per capita GDP. On the other hand, the unemployment elasticity is estimated to be 0.42 with the t value of 8.6, which suggests that an increase in unemployment rate also has highly significant impact on poverty. If unemployment rate increases by 1 percent, the percentage of poor will on average increase by 0.42 percent.

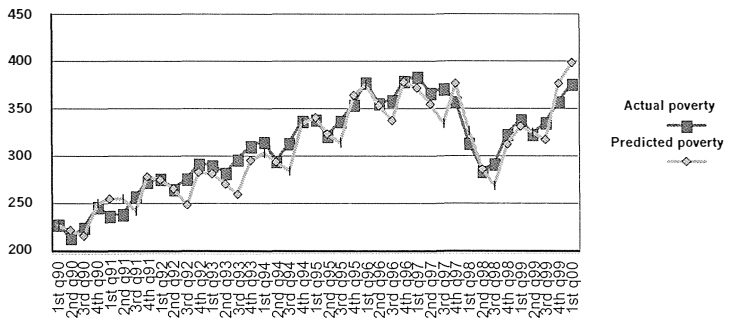
The coefficients of quarterly dummy variables are statistically significant as is indicated by their t values. It means that the incidence of poverty in Korea is significantly affected by the seasons. The incidence of poverty is expected to be lowest in the first quarter of the year and highest in the fourth quarter. From the policy point of view, this is an important result. This suggests that the government's poverty alleviation policies should be geared to those quarters, when the incidence of poverty is expected to be highest.

The coefficient of determination of the estimated regression equations is .95 or more, which means that the growth rate in per capita GDP, unemployment rate and seasonal dummy variables explain more than 95 percent of variation in the incidence of poverty. Given the sample size of 41, the value of R^2 of more than .95 can be regarded as giving a reasonable goodness of the model (see Fig 12). Thus, we may use the estimated regression models in Table 11 to forecast the incidence of poverty using the macroeconomic variable, namely, growth rate of per capita GDP and unemployment rate and seasonal information.

Table 11: Regression Model to Explain Poverty in Korea

Explanatory Variables	Coefficient	t_Value
Log head count ratio		
Constant	28.27	29.8
Log per capita GDP	-3.41	-27.0
Log unemployment rate	0.42	8.6
1st quarter	-0.80	-13.2
2st quarter	-0.34	-6.1
3rd quarter	-0.22	-4.2
R square	0.96	
Log poverty gap ratio		
Constant	31.37	27.6
Log per capita GDP	-4.05	-26.7
Log unemployment rate	0.54	9.2
1st quarter	-0.90	-12.4
2nd quarter	-0.37	-5.5
3rd quarter	-0.20	-3.2
R square	0.96	
Log severity of poverty		
Constant	32.98	24.8
Log per capita GDP	-4.44	-25.0
Log unemployment rate	0.67	9.9
1st quarter	-0.94	-11.1
2nd quarter	-0.36	-4.6
3rd quarter	-0.18	-2.4
R square	0.95	

Fig13: Goodness of fit of the regression model



The regression equations were estimated using the quarterly data beginning from the 1st quarter 1990 to the 1st quarter 2000. We utilized these equations to forecast the poverty incidence for the next four quarters from 2nd quarter 2000 to 1st quarter 2001. These forecasts are presented in Table 12. The percentage of poor in the 1st quarter of 2001 is expected to be 6.67 percent. This result suggests that Korea has recovered remarkable well from the economic crisis, which had an enormous adverse impact on poverty.

Table12: Forecasting Poverty Incidence

Period	Percentage of poor	Poverty gap ratio	Severity of Poverty
2nd quarter 2000	8.85	1.59	0.48
3rd quarter 2000	9.77	1.73	0.50
4th quarter 2000	7.15	1.19	0.33
1st quarter 2001	6.67	1.17	0.35

8. Concluding Remarks

Until the onset of economic crisis, Korea had been a roaring tiger in terms of its economic achievements. It maintained sustained high economic growth with relatively equal distribution of income and with a generally low level of unemployment rate. The impressive economic growth achieved in the past contributed to a sharp reduction in the incidence of poverty. The recent economic crisis changed this situation. The past gains made in reduction of poverty and income inequality came under threat from the crisis. Fortunately, prior to the crisis, Korea had some welfare programs in place. When the crisis hit the economy, the government responded quickly by expanding the existing programs and thus could provide timely help to the people most affected by the crisis. Consequently, the social sector in Korea recovered rapidly. The incidence of poverty is now estimated to be lower than its pre-crisis level. In some sense, the economic crisis has been a blessing in disguise. It has shifted the government's exclusive policy focus on rapid economic growth towards a mixture of growth enhancing and direct poverty alleviation policies. This has now become evident from President's vision of productive welfare, which endeavors to improve the quality of life for all citizens by promoting social development and a fair distribution of wealth.

The theme of this paper is pro-poor growth, which is somewhat consistent with the idea of productive welfare in the sense that the people, who do not enjoy the socially accepted

minimum standard of living, should be able to share the benefits of economic growth proportionally more or at least no less than the rest of the society. The empirical analysis presented in the paper suggested that economic growth has generally been pro-poor in Korea at least until 1997, when the financial crisis struck the Korea economy. The analysis also suggested that the impact of economic crisis has not been pro-poor; the poor suffered proportionally more than the non-poor during the crisis. It was also found that the rapid economic recovery benefited the ultra-poor more than the poor or the non-poor. This may have happened because in response to the economic crisis, the Korean government introduced many welfare programs including public works program, which helped the ultra-poor more than the poor or the non-poor.

The major component of the productive welfare will be to alleviate poverty. The rapid and sustained economic growth can play an important in achieving a rapid reduction in poverty. The paper suggests that economic growth is not sufficient to achieve this objective. The paper developed the idea of poverty equivalent growth rate, which is the product of growth rate in per capita GDP and the pro-poor index, which measures how the benefits of economic growth are distributed. The proportional reduction in poverty is monotonically related to the poverty equivalent growth rate. Thus to achieve a rapid reduction in poverty we should maximize the poverty equivalent growth rate rather than the growth rate alone. This means that the government should follow a mixture of growth enhancing and direct poverty alleviation policies.

A clear message that emerges from the economic crisis is that there is need for comprehensive social security systems that provides adequate safety nets to the people in desperate need on a permanent basis. In most developing countries, family and friends provide informal safety nets. These safety nets can be quite effective during normal times. But when there is widespread economic crisis, the informal safety net system breaks down.

Moreover, with increasing prosperity brought by rapid economic growth, traditional family values are fast disappearing, reducing the effectiveness of informal safety nets. Thus, the government needs to play an active role in providing safety nets to the people on a permanent basis.

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