

Economic Impacts of Basic Income in Korea

--Multiplier and Redistribution effect

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1. Introduction

It is well known that the Korean economy has successfully developed from one of the poorest countries in the world to a member of the OECD. Some people may assume that the Korean economy has a fairly equal income distribution because its Gini coefficient is around 0.31, which is the average of OECD countries(OECD, 2010). However, the Korean economy has become greatly polarized since the 1997 IMF crisis. Korean social expenditure is the lowest among OECD countries. In 2005, OECD members on average spent 21% of the GDP on public social expenditure (OECD, 2010). In Sweden and France, public social spending was 29% of the GDP while it was 7% in Mexico and Korea(OECD, 2010). According to the OECD, Korea's tax revenue is among the lowest, surpassing only Mexico and Turkey. From these facts we can infer that the Korean economy is severely market-oriented, and the level of welfare is very low compared to the level of per capita GDP. Under these circumstances, more and more people are becoming interested in a basic income policy.

The object of this paper is to examine two kinds of economic impacts of basic income in Korea. In section 2, we will derive the basic income multiplier, which is the multiplier effect due to basic income. After that, we will estimate the magnitude of the multiplier using Korean data. In section 3, we will deal with the redistribution effects of basic income among social classes, and compare them between various schemes of basic income.

2. Basic Income Multiplier

Distribution and growth does not always have a trade-off relationship. Sometimes they go together. While the main objective of the basic income policy is to redistribute income, it can also

stimulate growth. Interestingly, very few people mention the growth stimulating effect of basic income.

The basic income policy has a Keynesian multiplier effect, because it transfers income from people with a low propensity to consume to people with a high propensity to consume. We can estimate the magnitude of the basic income multiplier as follows.

For the moment, we assume that there are two classes in the economy: high income and low income. They have different marginal propensities to consume(MPC), which we will express as c_1 (high income class) and c_2 (low income class). When basic income is financed through income tax, the amount of net transfer of income for class i (ΔN_i) is the difference between basic income and income tax for that class. Since there are only two classes, $-\Delta N_1 = \Delta N_2 = \Delta N$.

If we disregard imports, decrease in consumption of high income class due to tax is expressed as

$$(c_1)(-\Delta N) + (c)(c_1)(-\Delta N) + (c)^2(c_1)(-\Delta N) + \dots, \quad [1]$$

where c means average(or overall) MPC. From the second stage, we use average MPC c instead of c_1 .

In the same way, increase in consumption of low income class due to basic income is expressed as

$$(c_2)(\Delta N) + (c)(c_2)(\Delta N) + (c)^2(c_2)(\Delta N) + \dots. \quad [2]$$

If we add these two equations, we get the amount of net increase in consumption:

$$(c_2 - c_1)(1 + c + c^2 + \dots)(\Delta N) = (c_2 - c_1)\left(\frac{1}{1-c}\right)(\Delta N). \quad [3]$$

We may call $(c_2 - c_1)\left(\frac{1}{1-c}\right)$ the basic income multiplier. This is definitely positive, since $c_2 > c_1$.

If there are n classes, the basic income multiplier is expressed as

$$\sum_{i=1}^n (c_i) \left(\frac{1}{1-c}\right) \Delta N_i, \quad [4]$$

where c_i and ΔN_i mean MPC and net transfer of income for class i , respectively.

Table 1 displays before and after tax disposable income, income tax and marginal propensity to consume by income groups in Korea.

<Table 1> income, tax and MPC by income group

income group	before tax disposable income(1,000 KRW)	after tax disposable income(1,000 KRW)	Tax(1,000 KRW)	MPC
1	4,295	4,289	6	0.6426
2	10,197	10,134	63	0.5180
3	16,014	15,846	168	0.4618
4	21,661	21,285	376	0.4545
5	26,786	26,231	555	0.4317
6	32,272	31,500	772	0.4128
7	38,356	37,212	1,144	0.3868
8	46,046	44,482	1,564	0.3673
9	56,741	54,237	2,504	0.3590
10	85,870	79,513	6,357	0.3092
total			13,509	
average	33,056	31,732	1,324	0.3856

Source: Department of Budget and Policy in National Assembly(2009)

For the sake of convenience, we assume that there is one person in each income group. If we further assume that the amount of basic income is 4 million won annually, we can calculate the amount of net transfer by income group using the same tax rate in table 1. Table 2 shows the result. Net transfer due to basic income for the first income group is 3,982 thousand won, while net transfer for the tenth group is -14,823 thousand won.

<Table 2> net transfer by income group

Income group	Basic income(1,000 KRW)	Tax(1,000 KRW)	Net transfer(1,000 KRW)
1	4,000	17.766	3,982.234
2	4,000	186.54	3,813.458
3	4,000	497.45	3,502.554

4	4,000	1,113.3	2,886.668
5	4,000	1,643.3	2,356.651
6	4,000	2,285.9	1,714.117
7	4,000	3,387.4	612.6286
8	4,000	4,631	-630.987
9	4,000	7,414.3	-3,414.32
10	4,000	18,823	-14,823
total	40,000	40,000	0

As we now know net transfer and MPC for each income group, we can estimate the total increase in income due to basic income according to equation [4].

$$\sum_{i=1}^n (c_i) \left(\frac{1}{1-c} \right) \Delta N_i = 5,509 \quad [5]$$

When we distribute 40,000 thousand won through basic income, the total income grows by 5,509 thousand won, which is equal to 13.8% of total basic income. If we annually redistribute 10% of GDP as basic income, the yearly growth in GDP due to basic income will be 1.38%. If we take imports into consideration, this effect will become a little smaller.

The multiplier effect clearly shows that we can promote economic growth through the basic income policy. When income increases due to basic income, tax revenue also increases because of the increase in income. Basic income increases tax revenue that can be used as basic income. This means that the basic income policy acts as a kind of financial stabilizer, or it has positive feedback effect.

3. Redistribution effects among social classes

Using simplified models, we will compare redistribution effects between traditional welfare policy and basic income. We first assume that there are 10 employed persons with an income of \$200 and 1 unemployed person. We also assume that the traditional welfare policy gives the unemployed \$100, and the full basic income policy gives everyone \$100.

In the case of the traditional welfare policy, we need to collect \$100 total from the 10 employed workers, and their after tax incomes become \$190. In the case of the basic income policy, we need to collect \$1,100 total from the 10 employed workers, and then distribute \$100 each to the 11 persons. Table 3 shows the changes in per capita income due to basic income, when there is no

administration cost for welfare management. We can see that there is no difference in the final result between the traditional welfare and the basic income system.

<Table 3> Redistribution effect with no administration cost

	number of people	no welfare	traditional welfare	basic income
employed	10	200	190	190
unemployed	1	0	100	100
income difference		200	90	90

In Table 4, we assume that the administration cost for managing the traditional welfare system is \$20. For the basic income policy, such an administration cost is not necessary because there is no need for a means test. From table 4, we can find that the basic income system is a little better than the traditional welfare system for the employed. And if we compare income differences between the two systems, we can conclude that labor incentive is also stronger under the basic income system than under the traditional welfare system.

<Table 4> Redistribution effect with administration cost

	number of people	no welfare	traditional welfare	basic income
employed	10	200	188	190
unemployed	1	0	100	100
administration cost		0	20	0
income difference		200	88	90

Finally, let us assume that there are 3 people with unearned income of \$2,000 each, 10 regular workers with income of \$400 each, 10 irregular workers with income of \$200 each and 5 unemployed people with no income. To give \$100 to everyone, we need to collect \$2,800. We assume proportional income tax. Table 5 shows the results. From this table we can find out the following two facts.

<Table 5> Redistribution effect with 4 classes

	number of people	no welfare	traditional welfare	basic income
unearned income	3	2,000	1,916.67	1,633.33
regular worker	10	400	383.33	406.67
irregular worker	10	200	191.67	253.33
Unemployed	5	0	100	100
Income difference between irregular worker and the unemployed		200	91.67	153.33
total	28	12,000	12,000	12,000

First, everyone except the unearned-income class becomes better-off under the basic income system, while everyone except the unemployed class becomes worse-off under the traditional welfare system.

Second, the income difference between unemployed and irregular workers under the basic income system is much greater than that under the traditional welfare system. This is closely related to the fact that there is no unemployment trap in the case of the basic income policy.

Compared to the traditional welfare policy, the main beneficiary of the basic income policy is the middle class(regular and irregular workers). Even regular workers become better-off under the basic income system.

In Korea, all attempts to mitigate the suffering of the unemployed have failed. The maximum unemployment benefit is 1.2 million won a month, and the benefit on average only lasts 3 months. Individuals who have never been employed such as the young recent graduate looking for work are not included in the unemployment benefit system. Self-employed individuals who lose their business also do not qualify for the unemployment benefit. This means that Korea has failed to move from the no welfare situation to the traditional welfare system as shown in table 5. This is because in the traditional welfare system, regular and irregular workers as well as unearned income class become net tax bearers.

Table 5 also shows the benefits of moving from no welfare system to the basic income system. All classes become better off in the basic income system. The basic income policy makes a coalition among regular workers, irregular workers and the unemployed possible.

We may explain this result using game theory. We assume that the current situation is a no welfare state. We also assume that a singleton coalition is impossible, that is one class alone cannot

form a coalition. One of the grounds that can rationalize this assumption is that in table 5, one class alone cannot get majority vote in the national referendum. According to game theory, an allocation is in the core if no other coalition has a feasible allocation that is strictly better for all its members.(R. Myerson, 2004). If we define a coalition that is strictly better for all its members as a blocking coalition, we can restate the above proposition as follows: an allocation is in the core if there is no blocking coalition for that allocation.

In table 5, the current situation(no welfare) is not blocked by the traditional welfare policy. This is one of the reasons why numerous attempts to introduce the traditional welfare policy have failed in Korea. But the current situation can be blocked by the basic income policy, because three classes(regular workers, irregular workers and the unemployed) can form a blocking coalition. And we can see that the basic income policy is in the core, since it is not blocked by any other feasible coalition. In summary, the basic income policy is possible and sustainable. The basic income policy is possible because it can block the current situation, and it is sustainable because once it is introduced, it is not blocked by any other coalition.

Next, we will apply similar logic to income decile group data of Korea.(table 1) We assume the same progressive tax rate as table 1, and basic income of 4 million won a year. Table 6 shows the results when we give basic income to the various income decile groups. The first case shows the net benefit by income group when we give basic income only to the first decile. The second case shows the result when we give basic income to the first and second deciles. The third case shows the result when we give basic income up to the seventh decile. The last case shows the result of full basic income, which means that we give basic income to everyone, as previously demonstrated in table 2.

<Table 6> Comparison between various schemes of basic income (1,000 KRW)

Income group	first decile only			first and second deciles		
	Benefit	Tax	net benefit	Benefit	Tax	net benefit
1	4,000	2	3,998	4,000	4	3,996
2	0	19	-19	4,000	37	3,963
3	0	50	-50	0	99	-99
4	0	111	-111	0	223	-223
5	0	164	-164	0	329	-329
6	0	229	-229	0	457	-457
7	0	339	-339	0	677	-677
8	0	463	-463	0	926	-926
9	0	741	-741	0	1,483	-1,483
10	0	1,882	-1,882	0	3,765	-3,765

Income group	Up to 7th decile			Full basic income		
	Benefit	Tax	net benefit	Benefit	Tax	net benefit
1	4,000	12	3,988	4,000	18	3,982
2	4,000	131	3,869	4,000	187	3,813
3	4,000	348	3,652	4,000	497	3,503
4	4,000	779	3,221	4,000	1113	2,887
5	4,000	1,150	2,850	4,000	1643	2,357
6	4,000	1,600	2,400	4,000	2286	1,714
7	4,000	2,371	1,629	4,000	3387	613
8	0	3,242	-3,242	4,000	4631	-631
9	0	5,190	-5,190	4,000	7414	-3,414
10	0	13,176	-13,176	4,000	18823	-14,823

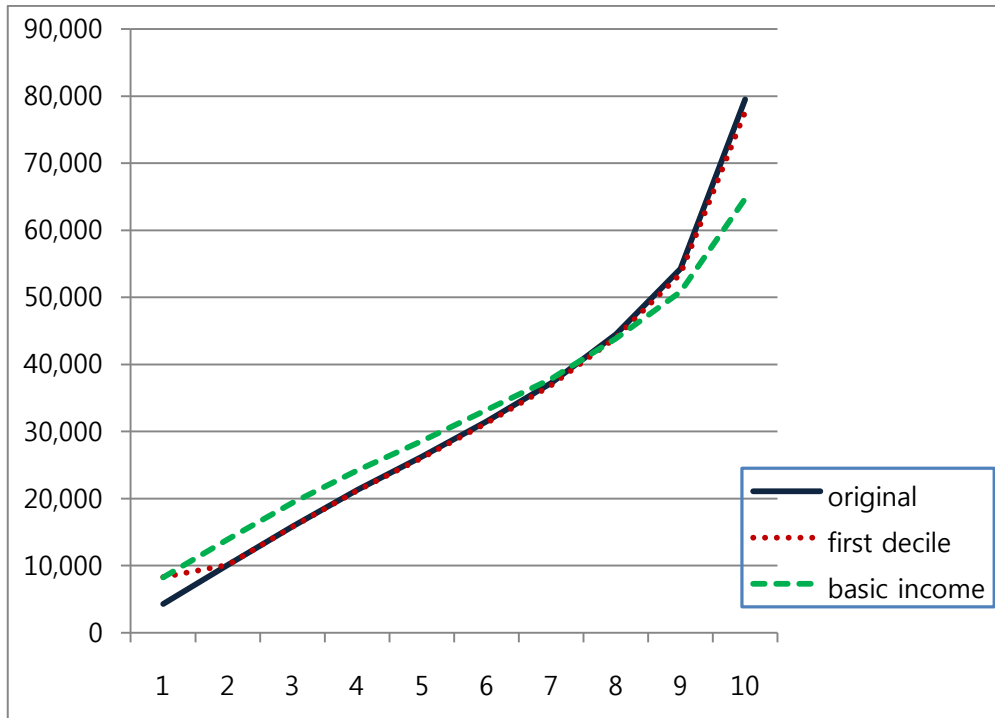
When we give basic income only to the first decile group, net benefits for the remaining decile groups become negative, in other words, they become net tax bearers. When we give to the first and second group, the remaining groups become net tax bearers. When we give basic income to everybody, only three income groups (the 8th, 9th and 10th decile) become net tax bearers.

It is interesting to note that for the last three income groups, full basic income is better than partial basic income that gives basic income up to the 7th decile, as the amount of net tax burden is smaller ($631 + 3,414 + 14,823 = 18,868$ thousand won VS $3,242 + 5,190 + 13,176 = 21,608$ thousand won).

From table 6, we find that under the traditional welfare policy, which guarantees minimum income for the lowest income group, the middle class becomes net tax bearers. For the middle class, the full basic income policy is better than the traditional welfare policy. On the contrary, for the highest income groups, the traditional welfare policy is much better than the basic income policy.

Figure 1 is the graphical representation of the three cases: the blue solid line represents original income, the green dotted line shows the result when we give basic income only to the first decile, and the red dotted line shows the case of full basic income. We can clearly see that under the basic income policy, the income line becomes much flatter and most of the population become net beneficiaries of the policy.

<Figure 1> Changes in income before and after basic income by each income group



4. Concluding remarks

In Korea, most economists believe that we cannot achieve growth and distribution at the same time, and much emphasis has been placed on growth at the expense of distribution. But this presumption is wrong for the basic income policy, because it can also promote growth by the multiplier effect. When basic income is financed through income tax, and if we exclude imports, the size of the multiplier effect for Korea is about 14% of the total amount of basic income. This also means that domestic consumption increases by the same size. Therefore it is possible to pursue growth and distribution at the same time.

There are major redistribution effects of basic income among social classes. Under the full basic income policy, 70% of the population becomes net beneficiaries, even if it is financed through income tax. Under the traditional welfare policy, the middle class becomes net tax bearers, but under the basic income policy, they become net beneficiaries.

This result has important political implications. In Korea, as mentioned in the introduction, the level of welfare is extremely low. Many attempts to increase the level of welfare have failed, because voters did not agree to increase tax. If the traditional welfare policy makes the middle class net tax bearers, it is unwise to pursue the traditional welfare policy. It may be politically easier to persuade people towards the basic income policy, because most people become net beneficiaries. If voters are reasonable, 70% of the population will agree to the introduction of basic income. If

people from the first decile to the 7th decile succeed in persuading 8th and 9th decile by presenting the last two cases of table 6, 90% of the population can agree to the basic income policy.

References

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