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Evaluating the Effectiveness of Food Assistance Programs Using Treatment Effect Model in South Korea

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1. Introduction

Research Questions:

- How current food assistance programs perform?
- How recipients and program staff perceive the value or usefulness of programs?
- How agricultural and farming objectives (e.g. stable farm prices) can be achieved by utilizing food assistance programs

2. Korea Food Assistance Programs

National Basic Livelihood Security Program:

- Provides cash assistance to low-income households
- The official poverty threshold used to be based on absolute poverty concept corresponding to a minimum standard of living
- Among items of the market basket for the poverty line (e.g. heat and water), food accounts for the largest proportion, **37.1%** as of 2014
- *However, how can we be sure that food is consumed based on the rate suggested?*

2. Korea Food Assistance Programs

Local and regional governments manage food assistance programs for specific target groups (e.g. children, elders, women):

/Prepared meals:

- Congregate meals are usually served in community child centers and senior centers
- Seniors with limited mobility have their meals delivered at home, and children have many other options (e.g. meal vouchers, home-delivered meal etc.)

/Commodity foods:

- Provide supplemental monthly food packages to pregnant, postpartum and breastfeeding women, infants, and children up to age five
- Provides fresh fruit and vegetable as snacks to children attending community child centers

2. Korea Food Assistance Programs

Program (Providing In-Kind or Cash Benefits)	2016 funding, \$	Funding share, %			
		National government	Regional government	Local government	Private
NBLSP	1,352,557,922 (78.6%)	81.1	11.9	7.0	-
Emergency Support Program	31,702,064 (1.8%)	77.2	9.0	13.8	-
Governmental Grain Price Discount	62,891,827 (3.7%)	86.0	6.5	7.5	-
Elderly Meal Service	80,657,433 (4.7%)		47.3	52.6	0.1
Children Meal Service	167,440,654 (9.7%)	3.1	50.3	46.6	-
Nutrition Plus Program	223,603,146 (1.4%)	43.1	17.4	39.4	0.1
Healthy Fruit Basket	985,323 (0.1%)	16.8	49.4	33.8	-
Total	1,719,838,369 (100%)	69.3	17.1	13.6	0.0

* \$1=1,130won

3-1. The U.S. domestic food assistance program budget

Program	2016 funding, million \$
Supplemental Nutrition Assistance Program	70,867 (70.5%)
The Emergency Food Assistance Program	372 (0.4%)
Community Food Projects	9 (0.0%)
Community Supplemental Food Program	222 (0.2%)
Fresh Fruit and Vegetable Program	177 (0.2%)
Senior Farmers' Market Nutrition Program	21 (0.0%)
Special Supplemental Nutrition Program for Women, Infants, and Children	6,350 (6.3%)
WIC Farmers Market Nutrition Program	18.5 (0.0%)
School Breakfast Program	4,195 (4.2%)
National School Lunch Program	13,522 (13.5%)
Summer Food Service Program	474 (0.5%)
Special Milk Program	9 (0.0%)
Child and Adult Care Food Program	3,358 (3.3%)
Congregate Nutrition Program	448 (0.4%)
Home Delivered Nutrition Program	226 (0.2%)
Grants to Native Americans: Supportive and Nutrition Services	31 (0.0%)
Nutrition Services Incentive Program	160 (0.2%)

* Aussenberg & Colello 2017

3-2. The U.S. vs. South Korea food assistance program budget

	South Korea	U.S.	South Korea -U.S. Ratio
2016 Budget for Food Assistance Programs, million \$	1,719	100,460	1.71%
2016 GDP*, million \$	1,872,132	18,624,475	10.05%
2016 Budget for Food Assistance Programs per 10 million \$ of GDP, \$	91.87	539.40	17.03%

3-3. Effects of NBLSP on expenditures

Effects of NBLSP on real consumption expenditures per capita:

	Propensity Score Matching (PSM)	Inverse Probability Weight (IPW)
Food	-0.8442*	-1.1230**
Housing, heat, water	+2.5931***	+3.2977***
Household goods, clothes	+1.8568***	+2.0674***
Health	-4.1339***	-3.6065***
Education	+2.0767***	+3.2259*
Transportation, communication, recreational service	1.6746	6.0171

*** p < 0.01, ** p < 0.05, * p < 0.1

3-4. Effects of food assistance programs on food expenditures

	Estimate	T-value
NBLSP	0.724	0.93
Household congregate meal service	5.131***	5.45
Household home delivered meal service	-2.260**	-2.37
Child household congregate meal service	-2.617	-1.21
Supplemental food program for infants	5.712***	3.47
Elder household congregate meal service	-0.0531	-0.16
Elder household home delivered meal service	2.703**	2.42
Householder's gender	-1.215	-1.22
Householder's age	0.138***	2.65
Householder's education (middle school graduated)	-2.468	-1.51
Householder's education (high school graduated)	2.541	1.35
Householder's education (above college graduated)	6.707***	2.65
Householder's marital status	-2.128**	-2.05
Number of household members	8.693***	15.64
Ordinary income	0.0459***	13.53
Number of temporary workers in a household	1.657***	4.93
Constant	6.976*	1.76

*** p < 0.01, ** p < 0.05, * p < 0.1

3-5. Effects of food assistance programs on disease & nutrition

		Methods	Average Treatment Effect	
			NBLSP	Other programs
Disease	Diabetes	PSM	0.007	0.032
		IPW	0.013	-0.051***
	Hyperlipidemia	PSM	-0.01	-0.043***
		IPW	-0.012	-0.065***
	High blood pressure	PSM	-0.032	-0.052
		IPW	-0.029	-0.168***
	Angina	PSM	0.012	-0.006
		IPW	0.025	-0.016***
	Myocardial infarction	PSM	0.017	-0.002
		IPW	0.032	-0.007***
	Stroke	PSM	0.021	0.001
		IPW	0.027	-0.017***
Nutrition	Undernutrition	PSM	0.003	-0.001
		IPW	-0.009	-0.052***
	Less than recommended energy intake	PSM	0.022	0.011
		IPW	0.012	-0.007
	Number of nutrients lacking	PSM	0.368**	0.009
		IPW	0.18	-0.803**

*** p < 0.01, ** p < 0.05, * p < 0.1

Conclusions

- It is hard to say that the NBLSP has contributed to the increase in food consumption for recipients
- Rather than cash assistance, in-kind benefits such as prepared meals and commodity foods are found to have increased food consumption through income effects
- The NBLSP provides only minor effects on health and nutrition improvement, but other food assistance programs appear to be effective
- Policy suggestions: (i) increase budget for food assistance programs, (ii) introduce food voucher program (Korean version of Food Stamp), (iii) expand meal services and (iv) link in-kind benefits (or prepared meals, commodity foods) with farming and agriculture



Thank you!