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INTERNATIONAL FOOD STAMPS

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*Willis Peterson

The farm income support and foreign food aid programs of the past several decades suggests that two common characteristics of the utility functions of high income nations are the desire to increase the incomes of farm people in their own nations, and to improve the diets of poor people in poor nations.

It is apparent, however, that the programs have not worked very well. The drawbacks of farm income support programs are well known. Support prices above market equilibrium levels create expensive and wasteful surpluses, their benefits are capitalized into the value of land which is detrimental to future generations of farmers who purchase the land, and the greatest share of income support goes to the largest and generally most prosperous farmers. Also commodities are treated unequally. Cash grain, dairy, and sugar producers receive the bulk of the income support while beef, poultry and vegetable farmers receive none. Moreover, in spite of the hundreds of billions of dollars poured into farm income support programs, farmers complain of low prices, government red tape, and interference in their production decisions. And rural communities continue to decline and lose population.

Foreign food aid programs such as P.L.480 also have drawn criticism. Subsidized food arising from the surpluses accumulated in the developed countries and shipped into the poorer, food deficit countries reduces the prices received by farmers in these countries and retards the development

of their agriculture. In spite of these food shipments, hundreds of millions of people suffer from malnutrition and it is estimated that over 40,000 (mostly children) die each day because of this condition.

The objective here is to suggest a new direction in farm and food aid policy--a single program that will increase farm prices in both the developed and less developed countries, encourage rather than discourage world food production, and go a long way towards eliminating malnutrition in the third world.

The Program

An international food stamp program would bear some resemblance to the U.S. program. Rich nations would issue food stamp coupon books to poor people in poor nations with a guarantee that food vendors in the recipient nations could redeem the stamps to the issuing countries for hard currency. The money could in turn be used to purchase the food of their choice in either their domestic markets or the world market.

The operational details of administering the program may vary from country to country but a few general points should be made. First, it is desirable to keep the program as simple as possible but targeting the food aid to the lowest income people. Because of the difficulty of measuring income of poor people in poor countries the simplest approach would be to give (not sell) stamps of varying values to everyone who requests them in the poorest urban neighborhoods, towns, or villages--the places where people are suffering from malnutrition. Some higher income people may take advantage of the program but the cost of screening them out would probably exceed the value of the stamps. Of course, stamps would vary in value by the average income level of the community and by age of recipients. Stamps

for babies and young children would carry smaller face values than those for teenagers and adults.

Second, it is important that the stamps not be tied to the food imported from donor countries. If they were, recipients would simply substitute donor country food for domestically produced food causing local prices to fall. Recipients must be free to purchase food in the open market. Since domestic supplies will not in most cases be adequate to supply the increased demand for food, it is essential that recipient countries open their borders to unrestricted food trade--exports as well as imports. Domestic food prices, therefore, would correspond to border prices. It would also be desirable for recipient countries to allow imports of agricultural inputs--fertilizer, seeds, chemicals, machines, etc., so that LDC farmers could respond in a greater degree to the increased demand for food in their countries.

The actual distribution of stamps probably is best carried out by neighborhood or village institutions and leaders such as educational, medical, or religious groups, or by local governments. The distribution agency can vary both within and among countries. The redemption of stamps into currency can be done by local financial institutions working with a representative of the donor country or agency. The distribution of stamps should not be more difficult than the distribution of physical commodities. In fact, it should be easier because the transportation, storage, and retailing functions would be decentralized in the private sector rather than being the responsibility of the donor.

In order to judge the feasibility of an international food stamp program, it is necessary to have some idea of differences in per capita

food production, trade, and consumption among nations. These values are measured in wheat equivalent quantities (WEQ). Total WEQ of a country is the total tonnage of agricultural output with each commodity weighted by the ratio of its world market export price over the world market export price of wheat.^{1/}

All agricultural commodities are included in a sample of 119 countries, which comprise about 94 percent of the world's agricultural land. To smooth out year-to-year fluctuations in production, three-year, 1982-84 average output was computed. The same general procedure was used to estimate agricultural imports and exports in WEQ units. In this case some adjustments were made in order to measure only agricultural output. For example, in beer and wine trade, only the agricultural commodities used to produce the final products are included. The trade figures are for 1983.

Per capita agricultural output in kilograms of WEQs for the 119 countries ranked from the highest to the lowest is presented in the Appendix. Also the amount available for consumption, obtained by adding imports and subtracting exports, is presented.

The average values of the two variables for the top ten and bottom ten countries of the 119 country sample, ranked by per capita production, are presented in Table 1.

Table 1. Per Capita Agricultural Production and Consumption (Kg. of WEQ per person per year, 1982-1984)

	<u>Production</u>	<u>Consumption</u>
Top ten countries	3869	2787
*Bottom ten countries	319	414

*Excludes Saudi Arabia.

The difference between the consumption levels of the highest and lowest countries is remarkable, although the large gap is due to quality differences (livestock products) as well as quantity. The greater the share of livestock and poultry products in the diet, the larger the WEQ for a given nutrient intake.

Although trade reduces the difference in the amount available for consumption between the highest and lowest countries, it does not by any means equalize per capita consumption across countries. Most of the nations ranked near the bottom are LDCs with limited ability to purchase food in the world market. It appears that most nations, especially the poor ones, in large part make do with what they produce at home. The simple correlation coefficient between per capita production and consumption for the 119 country sample is .85.

The average per capita consumption for the 119 country sample is about 1200 kilograms of WEQ. The median is about 900. Middle income countries tend to consume in the 700 to 1000 kilogram range, depending on population density. The figures below provide an indication of how much additional WEQs would be required to bring countries with per capita consumption below the 1000 and 700 kilogram threshold levels up to these levels.

<u>Threshold</u>	<u>Million metric tons</u>
1000 kg.	800
700 kg.	297

Nearly half of the additional output in both thresholds goes to India, whose per capita consumption level was 508 kilograms of WEQ. China (PRC) was omitted from the calculations of both thresholds. Its per capita consumption averaged 815 kilograms during the 1982-84 period.

The major food exporting nations (U.S., Canada, Argentina, Brazil, Australia, and New Zealand, plus the Western European countries) produced on the average 1811 million metric tons of WEQ annually during the 1982-84 period. The 297 million metric tons required to reach the 700 kilogram threshold represent a 16 percent increase in the total food output of these countries. Thus it is not out of the realm of possibility for these countries to supply the entire increase in output for all poor countries to reach the 700 kilogram level. The food exports of these developed countries during 1983 added up to about 500 million metric tons of WEQ. Expanding their annual exports by 297 million metric tons amounts to nearly a 60 percent increase.

In order for the program to work it would have to be a joint effort of the world's developed nations, each country contributing according to its population and per capita income. The recipient nations, at least to begin, are the 45 countries having a per capita annual consumption of 700 kilograms of WEQ or less. Mainly these are the lowest income countries. Middle income countries also have poor people who suffer from malnutrition. Whether these people could be brought into the program depends on how much the donor countries are willing to spend. Governments of middle income countries might be persuaded to initiate a similar program in their own countries to increase food consumption of their poorest citizens. Also private philanthropic and religious organizations could participate in the program, issuing stamps redeemable from their own funds.

It probably makes sense to initiate a pilot program in a small, low income country to work out the operational details and problems. Then the coverage could gradually be increased starting with the poorest nations

where hunger is most severe. As the program expanded, the full consortium of donor countries would begin to contribute funds, while phasing out their traditional farm income support and food aid programs, keeping the total costs roughly constant. Of course, the pilot project could be carried out by a single donor country such as the U.S.

Several advantages of an international food stamp program over traditional farm and food aid programs can be envisioned. First it is a market-oriented program where farmers produce for the market according to relative prices rather than for government stock piles or subsidized exports. Farm incomes and prices can be increased without creating artificial reductions in supply. Second, the food would be privately owned all the way from producers to third world consumers so there would be an incentive to move the products to consumers promptly rather than having them accumulate on the docks. Also beneficiaries of the program would be free to purchase those products which satisfy their tastes rather than having to take surplus commodities from donor countries. This would provide for more diversity of food supply and healthier diets than is true under surplus disposal programs.

Because the stamps would represent an income transfer to poor people in poor nations, the higher incomes of the recipients would allow them to increase their purchases of nonfood items as well as food. However, the relative decline in the price of food to the recipients would offset this tendency by encouraging substitution in favor of food. The relative magnitude of the two effects depends on the income elasticities of demand for food and nonfood, and on the cross elasticity of demand for nonfood with respect to the price of food. For the poorest people in poor

countries the income elasticity of food demand must be quite high if the primary reason for starvation or severe malnutrition is a lack of purchasing power. Thus one would expect that the largest share of the increased purchasing power would be spent on food.

From a pure welfare economics criterion, the best solution to a lack of purchasing power is a cash transfer so that recipients can buy those items that maximize their utility. But commodity specific money such as food stamps appears to be more politically palatable and is the next best thing to a cash transfer. Similar kinds of commodity specific money such as education, housing, or fuel stamps could be used in any country to enhance the ability of people to purchase more of those goods and services that society wishes to transfer to them. The use of such money eliminates the need for government to own physical facilities or goods and reduces the administrative cost of the programs.

Cost and Effects

The cost of an international food stamp program would depend on four factors: 1. the amount of food to be added to the diets of poor people in third world countries, 2. the increase in the world market price of food caused by the increase in demand by the recipient nations, 3. the increase in the quantity of food produced by the recipient nations due to the more attractive prices, and 4. administrative and transport costs.

Consider the 700 kilogram threshold which would require 297 million metric tons of WEQ. The 119 country group produced a total of 5113 million metric tons of WEQ annually during the 1982-84 period. The 297 million metric tons figure represents about a 6 percent increase in the food production of these 119 countries. The increase in the world market price

of food required to bring forth this increase in quantity depends on the world aggregate supply elasticity of food. The smaller the elasticity, the greater the increase in prices. It is to be expected that this elasticity is smaller in the short-run than in the long run. Consider a short-run supply elasticity of .20.

With a .20 short-run elasticity, a 6 percent increase in quantity requires a 30 percent increase in prices. This figure assumes that all countries allow their internal prices of food to increase with border prices. In reality some countries that do not participate as a donor or recipient in the program may attempt to maintain stable prices in their countries. If so the world market price would increase more than 30 percent. However, if prices increased much beyond 30 percent, there would be increasing pressure for these nations to open their borders, allowing their internal food prices to increase thereby stimulating their food exports. Realistically one might expect a 30 to 35 percent increase in the world market price of food in the short run.

Over the long run, 5 to 10 years after the start of the program, the supply elasticity would be much higher, say in the neighborhood of one. However there is reason to believe that world market prices of food would settle in at a level somewhat above the 6 percent increase implied by this elasticity. The increase in the economic growth of the recipient nations resulting from higher agricultural prices received by their farmers and their more open economies should increase their demand for food from what it would otherwise have been.^{2/} Thus it does not seem unreasonable to believe that the program would increase farm prices at least 10 to 15 percent in the long run.

At some point, as development occurs, the recipient nations will have increased their per capita domestic production to attain the 700 kilogram threshold, or become rich enough to buy the food without the help of the donor countries. At this time the program could be phased out. Of course, the mechanism could be kept in place as a standby measure in times of war or natural disasters such as droughts or floods that may cause famine to reoccur in parts of the world.

Having estimated the increase in world food prices resulting from the program, it is now possible to provide an estimate of its annual cost. The estimated cost will be limited to the short-run and the 700 kilogram threshold. During the 1982-84 period the world market (export) price of wheat averaged \$164 per metric ton. Adding 35 percent to this price to take into account the estimated short-run increase in food prices and multiplying this figure (\$221 per metric ton) by the 297 million metric tons required to reach the 700 kilogram threshold yields a cost of about \$66 billion. The 297 million metric ton transfer assumes that all of the additional food is supplied by nonrecipient nations, i.e. no additional output by the recipient nations. In reality some additional output is expected to be forthcoming from these countries as their agricultural prices increase. If so, the cost will be somewhat less than \$66 billion. Also there is transport and program administration costs. But as a rough approximation, the annual cost of the program should not exceed the \$70 to \$75 billion range.

How does this compare to the cost of present farm and food aid programs? Currently the U.S. and Western Europe spend about \$50 billion annually to support farm incomes. Add to this the cost of similar programs in Canada,

Australia, and Japan plus the cost of storing the surpluses and administering these programs, and the cost should run at a minimum in the \$70 to \$75 billion range. Also the developed nations currently spend about \$25 billion annually on concessional food aid programs, about .35 percent of their collective GDPs. Some of this is the value of surplus commodities accumulated from their farm programs so there is some overlap of the two figures. At any rate, it seems safe to say that the cost of an international food stamp program would not exceed the cost of current programs, and would likely be less.

Concluding Remarks

Hundreds of millions of people in the world suffer from malnutrition and it is estimated that over 40,000 die each day from the direct or indirect consequences of this condition. Recently there has been an increasing awareness that hunger in poor countries is as much a poverty or demand problem than one of supply (World Bank). In the developed countries the problem is one of overproduction and surpluses resulting from programs aimed at increasing farm prices. An international food stamp program could go a long way to eliminate malnutrition in the third world while increasing farm prices in both the developed and less developed countries by an estimated 30 to 35 percent. All this could be accomplished at a cost no greater and probably less than is currently spent on farm income support and food aid programs.

Footnotes

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1/ WEQ in country "j" is
$$WEQ_j = \sum_{i=1}^n P_i/P_w \cdot Q_{ij}$$

where P_i is the world market (export) price of commodity i , P_w is the world market (export) price of wheat, and Q_{ij} is the physical output of commodity i in country j . Further details on the construction of WEQ can be obtained from Peterson. The FAO Production Yearbook, 1984 served as the data source for the output figures. The trade figures are from the FAO Trade Yearbook, 1984.

2/ The positive relationship between income and food imports was reported by Houck in a previous study.

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Appendix. Per Capita Production and Consumption, Kilograms of WEQ, 1982-84.

<u>COUNTRY</u>	<u>PRODUCTION</u>	<u>CONSUMPTION</u>
New Zealand	7653	3380
Australia	4396	2459
Denmark	4249	3834
Canada	3576	2116
Ireland	3355	2987
Hungary	3302	2820
Argentina	3195	1946
Greece	3104	2864
Cyprus	2976	2812
France	2888	2652
United States	2858	2402
Poland	2707	2923
Bulgaria	2594	2339
Uruguay	2569	1729
Romania	2539	2582
Spain	2409	2643
Netherlands	2367	2796
Botswana	2297	1806
E. Germany	2226	2720
Italy	2107	2517
Yugoslavia	2088	2109
Austria	2077	2353
USSR	2043	2241

<u>COUNTRY</u>	<u>PRODUCTION</u>	<u>CONSUMPTION</u>
Israel	2013	2425
Turkey	1914	1679
Costa Rica	1908	876
Malaysia	1903	1214
Finland	1894	2167
Paraguay	1859	1456
Sweden	1820	1948
Czechoslovakia	1711	2053
W. Germany	1542	2233
Guyana	1516	1437
Switzerland	1492	2311
Brazil	1488	1198
Belgium	1484	2324
Panama	1451	1481
Ivory Coast	1390	686
Norway	1315	2029
Syria	1312	1446
United Kingdom	1279	1736
Equador	1275	1087
Cuba	1264	1490
Swaziland	1250	1075
Dom. Republic	1236	1212
Colombia	1229	1011
Honduras	1223	945
Portugal	1187	1763

<u>COUNTRY</u>	<u>PRODUCTION</u>	<u>CONSUMPTION</u>
Surinam	1136	809
Thailand	1086	910
P. New Guinea	1027	740
Chile	1024	1107
Mexico	995	1088
N. Korea	982	997
Tunisia	959	1207
S. Africa	955	940
Rwanda	904	853
Albania	865	808
Nicaragua	857	343
Guatemala	846	549
Madagascar	837	810
Gambia	836	673
El Salvador	822	507
Philippines	818	791
China (PRC)	799	815
Cameroon	788	603
Malawi	782	564
Burundi	750	683
Iran	743	941
Uganda	743	621
Burma	735	696
Zimbabwe	727	408
Egypt	715	1002

COUNTRY	PRODUCTION	CONSUMPTION
Venezuela	705	998
Liberia	700	686
Afghanistan	695	706
S. Korea	677	1017
Haiti	676	683
C.A.R.	673	597
Bolivia	673	738
Japan	653	1200
Peru	640	708
Senegal	631	652
Jordon	624	1154
Morocco	611	716
Indonesia	606	577
Tanzania	602	587
Niger	586	537
Mauritius	571	770
Sudan	561	412
Jamaica	558	794
Kenya	558	430
Pakistan	543	544
Iraq	537	1015
Sierra Leone	524	563
India	509	508
Guinea	505	504
Ghana	484	370

COUNTRY	PRODUCTION	CONSUMPTION
Congo	458	557
Benin	448	453
Bangladesh	447	466
Sri Lanka	446	350
Ethiopia	432	403
Somalia	431	238
Nepal	423	436
Togo	416	219
Gabon	406	641
Nigeria	404	438
Zaire	389	372
Algeria	385	780
Trinidad-Tobago	357	957
Chad	351	236
Upper Volta	340	312
Saudi Arabia	338	1706
Mali	324	215
Angola	292	343
Zambia	264	299
Lesotho	246	376
Mauritania	244	248