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Food Programs as Food Security Measures: The Case of Morocco

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Abstract. Food programs exist in Morocco since 1959 and were mainly used to insure income transfer and food security to poor households. These programs relied mainly on food aid which was used in food programs or in food projects. In the latter food aid was used to supplement labour salaries in poor areas. Food programs mainly assist poor people who have low income, large family size, malnourished children, or were at risk to migrate to the city. Both programs were supposed to allocate 25% of the energy requirement of the beneficiaries from staple foods used in Morocco (cereals, oil, skimmed milk for the weaning food programs). The impact of the food distribution was measured in the group of beneficiaries from weaning food, food for work, food assistance, and food for education programs. The results revealed that food programs contributed to household food security by insuring access to food regularly, predicting malnutrition (weight for age was positively and significantly associated to the amount of the weaning formula the child benefited from), insuring regular employment, and generating new income resources. They also allowed young groups of people to acquire skills which helped them to integrate the job market. But there was food leakage to populations which were not at most need of the aid. Food programs (regardless of the origin of the food) contributed to food security in low income, large family, and unemployed households. This suggests that food programs should continue to insure this security during the critical periods. Serious efforts should be made to contain the food leakage to no needy populations.

Keywords. Food programs – Food security – Morocco – Food aid – Evaluation of impact.

Résumé. Au Maroc, les programmes alimentaires existent depuis 1959 et ont servi à assurer un transfert de revenus et la sécurité alimentaire aux ménages pauvres. Ces programmes se basaient surtout sur l'aide alimentaire. Par la suite, l'aide alimentaire était utilisée comme supplément de salaire dans les zones pauvres. Les programmes alimentaires touchent surtout des personnes pauvres avec de faibles revenus, des familles nombreuses, des enfants malnutris, à risque de migrer vers la ville. Ces deux types de programmes sont supposés apporter 25% des besoins énergétiques des bénéficiaires à l'aide des aliments de base marocains (céréales, huile, lait écrémé comme aliment de sevrage). L'impact de la distribution alimentaire a été mesurée dans le groupe des bénéficiaires d'aliments de sevrage, aliment pour travail, aide alimentaire et aliments pour les programmes éducatifs. Les résultats montrent que les programmes alimentaires contribuent à la sécurité alimentaire des ménages en leur assurant un accès régulier à la nourriture, en prévenant la malnutrition, en assurant un emploi régulier et en générant de nouvelles sources de revenus. Ils permettent également aux jeunes d'acquérir des qualifications leur donnant de meilleures chances sur le marché du travail. Cependant, il y a eu des pertes au profit de populations non nécessiteuses. Les programmes alimentaires (sans tenir compte de l'origine des aliments) contribuent à la sécurité alimentaire des ménages dont les membres sont nombreux, au chômage et disposant de faibles revenus. Ceci suggère que les programmes alimentaires doivent continuer à assurer cette sécurité pendant les périodes difficiles. Des efforts sérieux doivent être faits afin que seules les populations ciblées bénéficient de l'aide alimentaire.

Mots clés. Programmes alimentaires – Sécurité alimentaire – Maroc – Aide alimentaire – Evaluation de l'impact.

I – Food Programs Description in Morocco

Three food programs constitute the core of food policies in Morocco. The food subsidy program was the major one and by far the heavier burden on the state budget. Food assistance and food for work are more targeted, cover a much smaller population and use less state resources. A brief description of the food subsidy program will be addressed and the two other programs will be described and analyzed.

The food subsidy program started in 1941 to face the increase of food prices. A compensatory fund was created to insure the program management. The main objective of this fund was to control prices of food and some other commodities which are necessary to the population's food security. The general policy of the food subsidy program was to protect the vulnerable population from food price fluctuations which

would expose vulnerable households to food insecurity. Staple foods such as: cereals, oil, and sugar are the main subsidized food products. Cooking gas is subsidized to ensure a source of energy which contributes to the household food security. Animal products such as butter, meat, and milk are not subsidized any more since 1974, 1975, and 1980 respectively. This program was hardly targeted and benefited to rich and poor alike (Laraki, 1990).

The food assistance program started in 1957 and was managed by a public institution: *Entraide nationale* at the ex-Ministry of Social Affairs and Artisanat (MASA). Currently, this institution is in charge of several social programs which contribute to ensure food security to vulnerable households and to institutions in charge of young orphans, disabled people, homeless and elderly. Food assistance is distributed at centers where beneficiaries attend other programs. At the socio-educative center (SEC) beneficiary mothers have to attend a health and nutrition class before they can receive the food. Work and education centers (ECT) contribute to give skills at professional centers to young adults who could not accomplish their studies at public schools and could not afford to join private ones. The beneficiary population of this program came mainly from low income and large family size households.

The food for work program was created in 1961 to contribute to the mobilization of poor and unqualified labor in order to attenuate unemployment and to ensure a national development. This program allocated a salary supplement to unskilled and under-used labor. Different projects were accomplished by this program which was managed by The Promotion Nationale (PN) at the Ministry of Interior (MI). These projects have been profitable to rural and urban areas. In rural areas forestation, water storage and management, roads and schools construction have been the main activities. In the case of forestation, food assistance was distributed to farmers who were willing to submit their land for forestation and land protection for several years. These farmers were recruited and paid the minimum agricultural wage and received a salary supplement of food. Each worker received 625 kg of wheat and 29.1 kg of oil (Amane *et al.*, 1991). In the urban areas, sanitary equipments, road construction and maintenance were important components of these projects. With the structural adjustment program (SAP) and the drought which affected Morocco during early 80s and 90s, the food for work program was reinforced during the late 80s and the beginning of the 90s. A compensatory food program (CFP) was created to attenuate the pervasive effects of these circumstances. This program allocated food aid to the Ministry of Interior to enlarge its food for work projects. This has ensured food security and seemed to predict immigration in 62,000 households per year during the 1987-1991 period (Amane *et al.*, 1991).

The program aimed at alleviating malnutrition is a peculiar program which is meant to contribute to food security for malnourished and at risk children (children of poor households and large family size). During the 1972-1976 period the Ministry of Public Health (MPH) conducted a feeding program at the center of mother and child health protection. At these centers mothers of malnourished children participated to the preparation of the rehabilitation food allocated to the child. In 1977, the MPH in collaboration with the UNICEF, started to distribute actamine, a weaning formula, to malnourished children. This is very important because it ensures food security to the children. The formula quantities allocated to the child, free of charge, could be shared with the other toddlers of the family because the MPH is flexible with that. In 1987, the number of beneficiaries has increased significantly and the formula's composition has been changed to improve its taste with the CFP. The beneficiary population has been changed and at risk children became eligible to the program which increased this population to 272,254 toddlers in 1991. During the same year, the amount of actamine received by a child was 2.38 kg. The average income transfer by beneficiary allowed by this program was 30.7 Dirhams (about 3 US \$) per year (*Ministère des Affaires Economiques et Sociales*, 1993).

The national school lunch program is the other important program ensuring food security to school age children of low income households. This program was created in 1956, mainly to foster school attendance of children from low income households who live far away from schools. In the late 80s the program, partially financed by the world food program (WFP), focused on the participation of rural children, mainly girls, to school lunch in order to encourage their attendance to school. The number of beneficiaries was 30,000 and 680,000 in 1957 and 1988 respectively. In 1992 this number was 1.41 million of children which was associated to the increase of the national budget and the WFP food assistance allocated to the Ministry of National Education (MNE).

Food programs and projects are mostly meant to ensure food security of vulnerable groups of the population. Thus targeting in these programs is important especially with the scarcity of resources. In the next section an evaluation of the population targeting in the food assistance, food for work and malnutrition alleviation programs will be reported.

II – Targeting Evaluation in Food Programs

The CFP was subject to three consecutive evaluations. The final evaluation which is the core of the present paper was conducted within this program. Thus only FFW, food assistance and nutrition rehabilitation programs were evaluated. Since the school lunch program did not benefit from the CFP it was not evaluated.

1. Materials and methods

A. Sampling

The methodology and provinces sampling in the present study were inherited from a previous evaluation study of the CFP. Thus Casa-Anfa, Marrakech, Meknes, and Errachidia were studied. They were selected according to the importance of the program and the size of the population they served. Two provinces, Errachidia and Marrakech, are in the south which is considered poorer than the rest of the country and have a large number of beneficiaries. Casa-Anfa is a better off area and has a smaller food aid program. Meknes is in the center of the country and is in the middle with respect to the program size and the socio-economic situation. These provinces represent the six economic areas of the country. Fifty centers and 386 beneficiaries were randomly selected in these provinces. The distribution of centers and beneficiaries is shown in *Table 1*.

B. Data collection

Data on the socio-economic, housing, demographic and food consumption characteristics of the population were collected using questionnaires.

The socio-economic status was measured using income, type of housing and job stability of the head of the household. Family size and the number of children in charge of the family measured demographic characteristics. Beneficiaries were the main informants in this study.

A score based on the socio-economic, demographic and food consumption characteristics was established. Household income, belongings, head of the household status and education level, type of housing, family size, number of employed people, food diversity, and child mortality were used to establish this score. The higher the score was, the better off households were. According to this score five household categories were defined:

- Category 1	-11	<=score<=	-5
- Category 2	-4	<=score<=	-3
- Category 3	-2	<=score<=	+2
- Category 4	+3	<=score<=	+4
- Category 5	+5	<=score<=	+11

The questionnaire was tested in a group of MASA centers in Rabat. This was administered by a group of field workers trained at the Catholic Relief Services (CRS) and centers.

2. Results

A. Socio-economic characteristics of the beneficiary population

The average income of the beneficiary population by type of center and province is shown in *Table 2*. The food for work program has served a very low income population which is mainly rural because the food aid was mainly used for dams, schools and road construction in small villages. The population of

the socio-educative centers, living mainly in the old urban sites, has a low income below the poverty cut off point. The other centers served a relatively better off population than FFW and socio-educative centers. The specialized artisanal centers had a population with a much higher income.

These results are supported by the figures reported in *Table 3*. This shows that the lowest income population tends to be in a non-stable employment situation. The largest proportions of the population with an unstable job was found in the FFW and SEC. Beneficiaries from the Artisanal Specialized Center had the larger income and were 100% job stable which confirms results on income presented in *Table 2*.

A large proportion of beneficiaries lived in the old medina except for the FFW and AMB participants. The former live in rural housing. The latter did not have a housing of their own because they live in dormitories. A smaller proportion of the population lived in shanty-town areas and in economic housing which were conceived to eradicate the shanty-town phenomenon (*Table 4*).

B. Demographic characteristics of the beneficiary population

The population under study was characterized by a large family size (6.8 +/- 2.6) and a large number of children to support (3.4 +/- 2.1) regardless of the province and the center studied (*Tables 5, 6*). Beneficiaries at the AMB were orphans by absence of one or both parents, which might explain the smaller size of their families. The family size and the number of children were not different from one center and province to the other.

The lowest number of children in the household was found in the specialized artisanal center where beneficiaries had the highest income and were 100% job stable, when compared to the rest of the population studied (*Table 6*).

One of the main objectives of the CFP was to serve the poorest population which might be the most affected by the SAP measures. In order to check on the degree of poverty of the CFP population the socio-economic score established was used.

Table 7 shows that only 28.4% of the poorest and 38.6% above median poor beneficiary population had benefited from the FCP during the last two years of the program. A significant decrease in the C1 population and increase in C4 and C5 were observed. This trend was reported during the second CFP evaluation when compared to the first one.

The impact of food aid on the nutritional status, household food diversity and household vulnerability was conducted separately on a larger sample of beneficiaries of mother and child health program. This impact was analyzed using multiple regression for the nutritional status and food diversity and logistic regression for household vulnerability.

C. Impact of the food aid on the nutritional status

The impact of the amount of the formula on the child nutritional status, as measured by the weight for age, is shown by Equation 1. An increase of the amount of the formula received increased significantly ($p < 0.05$) the weight of the beneficiary child.

Equation 1

$$W = 6.92 + 0.10 \text{ AGE} + 0.05 \text{ ACTAMINE}^a + 0.18 \text{ ELHH} - 0.46 \text{ SES}^a - 0.06 \text{ TNC} + \text{RESIDUALS}$$

a: $p < 0.05$

W : Weight of the beneficiary child

ELHH : Education level of the head of the household

SES : Socio-economic status of the household

TNC : Total number of children

R² = 0.320

Adjusted R² = 0.306

D. Impact of the food aid on the household food consumption

Food diversity, used as a proxy of the household consumption, was negatively associated to the food aid received (Equation II). This was unexpected because it was assumed that part of the increased household budget would have been allocated to the family food consumption as it was claimed by beneficiaries (Lemtouni, 1991).

Equation II

$$\text{FOOD DIVERSITY} = 5.24 + 2.22 \text{ SES }^a + 0.29 \text{ NCS }^c - 0.08 \text{ ACTAMINE }^a - 0.13 \text{ TNC }^b$$

a: p < 0.001

b: p < 0.005

c: p < 0.05

NCS = Number of children at school

TNC = Total number of children

R² = 0.38

Adjusted R² = 0.369

E. Impact of food aid on the household vulnerability

The chances of being a vulnerable household were decreased by the aid received, the mother's and father's education level, and by the type of housing (Equation III). Living in an economic type of housing decreased these chances when compared to shanty-town housing. The higher the mother and the father level of education the less vulnerable the household was. The larger the number of children at school the bigger the chances of vulnerability were.

Equation III

$$\text{LOG [P(VULNERABLE/1-P(VULNERABLE))]} = 2.98 - 0.11 \text{ TNC} + 0.18 \text{ NCS} - 0.22 \text{ HT }^a - 0.46 \text{ FEL }^a - 0.38 \text{ MEL }^a - 0.48 \text{ ACTAMINE}$$

a: p < 0.001

P(VULNERABLE) = Probability of being vulnerable

NCS = Number of children at school

TNC = Total number of children HT = Household type

MEL = Mother education level

FEL = Father education level

- 2 log likelihood ratio = k²= 35.267 with 6 degrees of freedom

P < 0.001

3. Discussion

The present study shows that FFW and CSE programs have served the worst off (according to their monthly income) and the more exposed populations to job insecurity when compared to the other programs. These populations have a large family size and number of children in charge. These variables are strong risk factors to food insecurity at the household level. The program has played an important role in reaching a part of the population at risk of food insecurity and provided it with jobs and food supplement in case of FFW and with food assistance and nutrition education in CSE program. The aid distributed in these programs is mainly staple food which was supposed to bring about 25% of the energy requirements of the household. At training centers, beneficiaries were in a better off stratum of the population which is probably less exposed to food insecurity. Food programs contributed to ensure a regularity in the availability of food at the household level according to beneficiaries (Lemtouni, 1991). At the training centers this aid has allowed beneficiaries to acquire new products such as dairy products and fruits (Lemtouni, 1991). This contributes to improve household nutrient intake, especially that of calcium which is the major deficient nutrient in the Moroccan diet. This contributes to ensure nutrition security which is

different from food security. During the field work of a different study it was observed that several households would wait for the father to come back from work, late in the afternoon, to start preparing their meal for the day. Toddlers and school children had to wait for that meal if they are not involved in an aid program. This is a clear example of a daily food insecurity within a household. The problem of this insecurity is crucial in non schooled children who depend totally on household food availability. These children have no access to other sources of food as it is the case of toddlers and children at school.

At SMI centers, at risk and malnourished toddlers, from low income households living in the old medina and sub-urban areas received a formula rich in energy and proteins. This program has contributed to overcome and to prevent food insecurity and malnutrition in low income households (Lemtouni, 1993). This is a very important program because it deals with food insecurity in the most vulnerable group of the population especially in the Moroccan environment. In this environment children are most of the time left to themselves with respect to food intake. At two years of age, the child joins adults to compete with them, around the same plate, over a type of food which is mainly made for adults. This program provides some nutrition education which might contribute to sensitize mothers to adapt child feeding to her economical means in order to contribute to food insecurity alleviation.

When the socio-economic variables were used separately they showed that the population is a needy one and lives below the poverty line which was US \$ 316 and US \$ 283 in the urban and rural areas respectively (*Direction des Statistiques*, 1993). The socio-economic score showed that only 28.3% of the worst off population has benefited from the food aid. This shows that there were problems with population targeting. This should be taken into consideration in programs aimed at alleviating food insecurity which increases with poverty.

With respect to the impact of the food aid on the nutritional status, food consumption and household vulnerability, this study suggests that programs aimed at alleviating malnutrition in vulnerable populations are necessary but not sufficient to alleviate food insecurity. Food for work, school lunch, and combating malnutrition are the kind of programs to contribute to food insecurity alleviation in different members of the household during critical periods (drought, structural adjustment for example). This kind of programs allocate food supplement, thus nutrient supplement, which contributes to nutrition security in the different members of the household.

Equation I and II show that determinants of the nutritional status and the household food consumption are different. This is not surprising because changes in the household food consumption, ensuring a household food security, may not change the child nutritional status, then his/her food security, if nutrition education is not provided. Thus different but complementary strategies should be applied to alleviate food insecurity for all the members of the household in order to prevent malnutrition.

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Table 1. Beneficiaries distribution by center and province

Centers	Provinces				Total
	Anfa	Marrakech	Meknes	Errachidia	
FFW	10	16	17	16	59
CA	0	25	16	12	53
AMB	0	9	16	24	49
CIP	8	0	9	12	53
CSP	1	6	0	0	7
CSA	4	0	5	0	5
CSE	9	25	8	15	57
CET	16	26	8	16	66
CSMI	8	14	19	16	57
Total	56	121	98	111	386

Table 2. Household average monthly income by type of center and province (8.75 dirhams = 1 US\$)

Centers	Provinces			
	Casa-Anfa	Marrakech	Meknes	Errachidia
FFW	1248.6	791.1	893.4	894.4
SD*	1078.8	268.8	789.7	28.3
AMB	/	1342.0	1540.6	1052.5
SD	/	1255.2	896.0	1033.1
CIP	1125.0	/	1622.2	1370.8
SD	872.8	/	1414.8	639.5
CSP	1930.0	1243.3	/	/
SD	0.0	561.0	/	/
CSA	4350.0	/	1660.0	/
SD	409.3	/	770.9	/
CSE	1166.7	799.6	1181.2	918.3
SD	456.4	477.3	1073.5	387.2
CET	1260.3	1533.8	1525.0	1363.6
SD	732.4	976.5	834.8	744.2
SMI	1383.7	1729.3	822.9	1528.7
SD	679.8	1266.4	370.9	768.1

SD = Standard Deviation.

/ = No beneficiaries or data not available.

Table 3. Distribution of the population according to the employment situation of the head of the household

Centers	Stable	Occasional
FFW	5.3	94.7
CA	71.1	28.9
AMB	61.3	38.7
CIP	61.9	38.1
CSP	83.3	16.7
CSA	100	0.0
CSE	25.4	74.5
CET	55.5	44.4
CSMI	60.7	39.3

Table 4. Distribution of households according to the type of housing

Centers	Shanty-town	Medina	Economic	Others
FFW	1.7	28.8	15.2	54.2*
CA	9.4	56.6	15.1	18.9
AMB	4.1	24.5	8.2	63.3*
CIP	13.8	51.7	31.0	3.4
CSP	0.0	71.4	14.3	14.3
CSA	11.1	55.6	33.3	0.0
CSE	14.0	47.4	17.5	21.0
CET	7.6	66.7	10.6	15.1
CSMI	8.8	63.2	14.0	14.0

*Hard to qualify because it was mainly rural housing.

Table 5. Distribution of the population according to the family size

Centers	Provinces			
	Casa-Anfa	Marrakech	Meknes	Errachidia
FFW	7.1	6.8	7.6	7.2
SD*	4.4	2.7	2.6	2.7
CA	/	7.0	5.9	8.8
SD	/	2.2	3.1	2.2
AMB	/	4.3	2.9	7.6
SD	/	2.6	2.5	2.3
CIP	6.1	/	7.8	8.2
SD	1.0	/	2.3	1.3
CSP	7.0	7.7	/	/
SD	0.0	2.3	/	/
CSA	7.0	/	7.0	/
SD	0.7	/	1.1	/
CSE	6.7	6.5	6.6	6.7
SD	2.0	2.7	2.2	1.9
CET	7.1	7.5	6.7	7.4
SD	1.9	2.2	1.6	2.6
CSMI	6.0	7.2	5.4	6.4
SD	2.1	2.5	1.9	2.6

SD = Standard Deviation.

/ = Data not available.

Table 6. Distribution of the population of the FCP according to the number of children to support

Centers	Provinces			
	Casa-Anfa	Marrakech	Meknes	Errachidia
PN	2.3	2.7	3.2	3.5
SD*	2.5	2.2	1.9	2.1
CA	/	2.1	2.2	4.7
SD	/	2.0	1.7	2.2
AMB	/	1.0	1.5	4.5
SD	/	0.8	1.9	2.1
CIP	4.0	/	4.0	5.2
SD	1.0	/	2.0	1.9
CSP	/	4.7	/	/
SD	/	1.2	/	/
CSA	1.7	/	4.0	/
SD	0.4	/	1.1	/
CSE	4.1	3.6	3.6	4.3
SD	1.7	1.6	2.0	1.6
CET	3.7	3.1	3.7	4.3
SD	1.7	2.1	1.6	1.7
CSMI	3.2	3.6	2.7	3.7
SD	1.7	1.7	1.6	1.9

SD = Standard Deviation

/ = No beneficiaries or data not available.

Table 7. Distribution of the FCP population according to its socio-economic score in 1989 and 1991

Score	1989		1991	
	Total	%	Total	%
C1	107	26.1	20	5.5
C2	96	23.4	89	23.2
C3	159	38.8	128	33.2
C4	29	7.1	71	18.4
C5	19	4.6	78	20.2