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9. ABSTRACT

Whether supplementary feeding programs are an effective way of combatting malnutrition is controversial. Critics of such programs argue that the supplemental food commonly does not reach a high proportion of the target group, and that such programs effectively divert attention from basic problems of insufficient income and food. The usefulness of supplementary feeding as a nutritional intervention can only be decided within the context of a specific national setting. This study explores the Chilean experience of milk distribution over a 50-year period. It then examines the milk program in 1971 and 1972, during the first two years of the government of Salvador Allende. Finally, it discusses the consequences of the milk program in Chile and factors that have influenced its development. The milk program may have contributed to some improvement of nutritional standards in Chile. It certainly led to heightened attention to nutrition in the practice of health care. However, malnutrition is still a feature of Chile's social order. The eradication of malnutrition in Chile will require sharp changes in patterns of production, distribution, and consumption. Those changes are unlikely to be accomplished by autonomous measures grafted onto them.

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**SUPPLEMENTAL FEEDING AS A NUTRITIONAL INTERVENTION:
THE CHILEAN EXPERIENCE IN THE DISTRIBUTION OF MILK**

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Milk distribution was introduced as a nutritional intervention in Chile in 1924 and thereafter became an increasingly important component of government health policy. The program reached its greatest extension during the three-year presidency of Salvador Allende when every Chilean child under 15 and pregnant and nursing mothers were entitled to receive the equivalent of approximately one-half liter of milk per day.

While rarely on the scale of the milk distribution program in Chile, the provision of free food to specified population groups has long represented the single most common approach to reducing malnutrition in developing countries. According to Alan Berg supplemental feeding programs have been initiated in nearly 100 countries and account for more than 95 percent of all resources directed to child nutrition.(1:160) Considerable controversy, however, has been generated among nutrition specialists in Chile and elsewhere concerning the effectiveness of food distribution programs in raising national nutritional levels. The United Nations Children's Fund, which has been a major sponsor of child feeding programs, argues that "there is a need for countries to establish permanent supplementary child feeding programs."(2:11) Nevin Scrimshaw, on the contrary, is persuaded of "the general failure of food distribution programs intended to reach the preschool child and prevent protein-calorie malnutrition."(3:793)

On their face, supplementary feeding programs appear as a logical and appropriate solution to the nutrition problems facing developing

countries. In these countries a high proportion of children suffer from a range of nutrient deficiencies; the provision of additional food stuffs to complement their inadequate diets would seem a rational way to overcome the deficiencies. Advocates of supplementary feeding programs argue that such programs, besides supplying missing nutrients, "may assist in educating mothers in sound nutritional practices, and act as an incentive for the increased use of health services."(4:3)

In questioning the value of feeding programs Scrimshaw warns against the misconception that "because a missing nutrient is the cause of most nutritional deficiency disease, the way to prevent it is to supply food." He argues that, since malnutrition results from a complex of interrelated biological, environmental, and social factors, the simple provision of foodstuffs or nutrients is not necessarily the most appropriate means to its eradication.(3:793) He does, however, report that, with the introduction of a reasonably efficient child feeding program in a village in the Guatemalan highlands, both morbidity and mortality rates fell sharply over a five-year period.(3:795)

Other arguments against supplementary feeding programs relate to the high cost of such programs, estimated by UNICEF in 1972 at \$15 to \$30 per year per beneficiary,(2:13) and the extreme difficulties of reaching the most needy groups in developing countries. It is further suggested that distributed foods are often consumed by the entire family rather than by the intended recipient, and that feeding programs may change behavior in negative ways, e.g., milk distribution resulting in trends toward earlier

weaning. John Mellor, one of the few observers concerned with the political economy of malnutrition, objects to feeding programs on political grounds, flatly stating that such programs generally assist only a small proportion of the malnourished, but effectively divert attention from basic problems of insufficient income and food.(5:73)

The two sets of arguments are not really joined. The proponents of supplementary feeding programs point to their potential contribution to overcoming malnutrition by filling important gaps in inadequate diets and by encouraging nutritionally beneficial changes in food and health practices. Critics argue that institutional and cultural barriers are likely to prevent feeding programs from achieving even their minimal objective of supplying vulnerable groups with needed foodstuffs. They further assert that even where such barriers can be surmounted, the mere provision of nutrients will not, by itself, resolve the problem of malnutrition. These differences between critics and proponents suggest to us that an assessment of the usefulness of supplemental feeding as a nutritional intervention cannot be made in the abstract, but only within the context of a specific national setting.

This study will explore the Chilean experience in the distribution of milk over a 50-year period. The first section discusses the origins and history of milk distribution in Chile within the country's evolving political and economic contexts; we next provide a detailed examination of the milk program in 1971 and 1972, during the first two years of the government of Salvador Allende. On the basis of the information and analysis presented, we then proceed to a more general discussion of the consequences

of the milk program in Chile and of the factors which have influenced its development.

THE ORIGINS AND DEVELOPMENT OF THE CHILEAN MILK DISTRIBUTION PROGRAM

Government distribution of milk in Chile began in 1924 with the passage of the country's first social security legislation. This legislation, the earliest of its kind in Latin America, provided medical care insurance to a portion of Chile's industrial workers. As part of their medical coverage the small number of working mothers insured under the law were entitled to receive the equivalent of approximately one-half liter of milk per day for each child under the age of two. The provision of milk was justified on the grounds that working mothers were not able to breastfeed their children.(6:119)

The passage of social security legislation was one of a series of social and economic reforms introduced in Chile in 1924 and 1925. These reforms, which included the adoption of a new constitution, had been the basis of the successful campaign of Arturo Alessandri for the presidency of Chile in 1920. The election of Alessandri, who had achieved relatively broad support from the country's middle- and working-class sectors, signaled the end of the domination of Chilean politics by the so-called traditional oligarchy and the initiation of Chile's modern political era.

Antedating the government's distribution of milk under social security, a private charitable organization had initiated the provision of free milk to mothers unable to breastfeed and to malnourished pre-school children at centers in low-income neighborhoods in Santiago and Valparaiso. The centers -- called "Drops of Milk" -- were first established in 1901 and continued operating until the 1950's, but never enrolled

more than 3,000 children in any given year, a coverage far too limited to have had any significant impact on the country's overall nutritional problem. They did, however, pioneer the idea of supplemental feeding in Chile, and the records of their experience, which indicated that their beneficiaries had far lower morbidity and mortality rates than found among children generally, strengthened the case for government milk distribution.(7)

Legislation adopted in 1937 introduced important changes in the concept and practice of health care in Chile. Attention began to turn to preventive care rather than curative medicine, and special emphasis was given to maternal and child health care aimed at reducing the country's high rates of infant mortality and improving nutritional standards.(8:19) The passage of the so-called "Mother-Child Law" extended medical coverage under social security to the wives of insured workers and their dependent children up to two years old. The coverage provided for the distribution of the equivalent of a half-liter of milk to the children.(9) The first National Council of Food and Nutrition was also organized in 1937.(6:155)

The Minister of Health at the time was Eduardo Cruz Coke, one of the most prominent names in Chilean medical history and a man of considerable political influence. He participated in the founding of the Christian Democratic party and later, in 1946, was to become a presidential candidate. As a professor of medicine in the 1920's Cruz Coke is credited with the introduction of nutrition courses at the University of Chile. His students and associates subsequently provided the leadership for most nutrition programs in Chile and were responsible for a large share of the research done in the area for the next 30 years or so.

Cruz Coke's importance, however, should not be overstated. Pressure for changes in health care practices had long been building in the medical community. Under the initiative some of Chile's most socially progressive doctors, many of whom had studied in Europe, reform movements were organized in the early 1930's in several of the country's larger cities. Through publications, public forums, and private lobbying efforts, groups of physicians brought attention to the backwardness, disorganization, and ineffectiveness of health services in Chile and sought comprehensive reforms in those services.(10) Infant mortality rates in Chile, which were above 200 per thousand and had declined only marginally during the previous 20 years, gave special cause for increased concern to maternal and child health services.(9) Several surveys, including a nationwide survey conducted under the auspices of the League of Nations in 1935, demonstrated that malnutrition was a widespread, serious affliction among low-income groups. These surveys, incidentally, indicated that the most serious deficiencies were calcium, vitamin B, and proteins, suggesting that the distribution of milk could be a particularly effective remedy.(6:53, 74)

This early reform and expansion of public health care cannot be analyzed in isolation from the broader social and political changes occurring at the time. Congressional elections in 1936 had resulted in important victories for the newly formed Popular Front, a coalition of the working class Communist and Socialist parties and the middle-class Radical party. Salvador Allende, a doctor himself and a vocal advocate of health reform, was reelected to Congress. Two years later, in 1938, the Popular Front candidate, Pedro Aguirre Cerda, assumed the presidency of the Republic.

These years were a period of transformation in the balance of political forces in Chile as middle- and urban working-class groups began to occupy increasingly dominant positions in the country's politics.

Even after the passage of the "Mother-Child" law the distribution of milk was still limited to about five percent of Chilean children under two years of age. The restricted distribution in part reflected the still limited extension of health care under social security. Most workers in larger and middle-sized industries and public employees were covered, but agricultural workers, the self-employed, and persons in service occupations were typically excluded. Public agencies had been established to provide medical care to persons lacking social security (and unable to afford private services) but their coverage was also limited and the lack of adequate resources restricted their activities.(11:363) Only small quantities of milk were distributed outside of the social security system.(12)

Through 1954 the quantity of milk distributed increased relatively slowly. By 1943, some five years after the passage of the "Mother-Child" law, approximately 370,000 kilograms of powdered milk (the equivalent of 3.7 million liters when reconstituted) were distributed to some 18,000 beneficiaries who represented less than ten percent of the 260,000 children of this age group in Chile. In 1948 a total of 460,000 kilograms of milk were dispensed by Chile's health services, and in 1951 approximately 630,000 kilograms were designated for some 32,000 beneficiaries -- slightly more than ten percent of all children in the eligible age category.(6:122)

In 1952 the different government agencies responsible for health care in Chile were merged to form a unified National Health Service. The new

Health Service assumed responsibility for all of the country's preventive health activities and the provision of medical care to families insured by social security and to those classified as medical indigents. The creation of a unified health system in Chile, which has been accomplished in few other developing countries, led directly to an expansion of health coverage and a general upgrading in the quality of care provided. The medical profession had long been supportive of the proposed integration since it was expected to improve efficiency of health care delivery without affecting the profession's autonomy or income.(10,13)

The legislation creating the National Health Service, like much of the country's other social legislation, was enacted in a presidential election year. The election of 1952 was won by General Carlos Ibanez del Campo, who promised an authoritarian but populist government. He ran as an independent albeit with support from factions of the Socialist party, and his victory has generally been interpreted as an indicative of a widespread disaffection of the Chilean electorate from traditional parties. The period immediately prior to Ibanez's election was marked by the inauguration of Chile's first nationally owned milk-processing plant and by a decree of the Ministry of Health requiring that wheat flour used for bread be enriched by vitamin B.(6:155)

The newly formed National Health Service included among its agencies a department of nutrition. The Department, however, was understaffed and underfinanced and its efforts were largely confined to the sponsoring of small surveys and pilot projects, particularly in the area of education. The distribution of the milk, which continued to be the country's most

important nutritional measure, was managed by the Maternal and Child Health Care Division as a part of the overall medical attention provided to mothers and young children.

Following the inauguration of the new National Health Service the milk program began to expand more rapidly. Families outside the social security system became eligible to participate in the program and children from two to six were included as beneficiaries along with infants and pregnant and nursing mothers. In 1954 some 1.4 million kilograms of powdered milk (double the amount provided in 1951) was distributed to approximately 70,000 recipients.(14:16) The growing cost of the program was offset by an increase, from five to ten percent, in the amount of social security funds allocated for the purchase of milk. By 1956 distribution had expanded to about two million kilograms.(14:16)

In 1958 the Chilean Congress effectively doubled the funds available for the milk distribution program by allocating five percent of the family allowance then paid to Chilean employees and workers to the purchase of milk. As part of their lobbying campaign for this measure, public health authorities solicited letters in support of the milk program from foreign nutrition specialists and brought to Santiago a delegation of Italian doctors to report on the results of milk distribution in Italy following World War II. The measure, which was formally introduced by the four women members of the legislature, provided the first and only independent review of the milk program by the Chilean Congress.(15) That it was approved unanimously in both houses is suggestive of the program's broad political appeal and of a general consensus among elected officials regarding its popularity among Chilean voters.

The only serious opposition to this measure was generated by milk producers in Chile, who were troubled by the prospect of sharply increased milk imports to supply the program -- even though assured by government authorities that the Service would purchase all domestically produced milk offered for sale before turning to foreign suppliers.(15) The milk producers themselves did not have significant political influence, but they could generally count on the support of the powerful National Agrarian Society, the organization of Chile's rural landholders. The approval of expanded resources for the milk program again occurred in a presidential election year. The election saw Jorge Alessandri, the candidate of the traditional right in Chile, achieve a narrow victory over Salvador Allende, the candidate of the Socialist and Communist Parties.

With the increased financing the quantity of milk distributed rose in the first year of the Alessandri government to nearly eight million kilograms. The beneficiaries numbered approximately 400,000 or some 25 percent of those potentially eligible to receive milk.(14;16) Politically conservative, fiscally orthodox, and closely tied to the interests of large rural landowners, the Alessandri government, however, allowed no further expansion of the program during its six-year term. The program's growth was fundamentally limited by the government's unwillingness to import additional quantities of milk, probably reflecting as much the influence of agricultural interests on government policy as the administration's concern for its balance-of-payment situation. Alessandri also vetoed a bill to allow CARE to assist Chile's school-feeding programs with surplus food donated under PL 480 -- a veto incidentally, which was subsequently overridden by Congress.(15)

Eduardo Frei, candidate of the Christian Democratic Party, was elected to the Chilean presidency in 1964 by a substantial majority. His program promised extensive social reform and some structural change, particularly emphasizing the reduction of inequalities among different social classes and the incorporation of previously excluded groups into the national community. High priority was assigned to both health and education, and a substantial expansion of these services pledged. Just prior to Frei's election, Congress had approved the establishment of a new organization, the National Junta for School Assistance and Scholarships, to coordinate and oversee the growth of government assistance, including school feeding programs, to students from low-income families.(16:8) Soon after his inauguration, the country's first national plan for health care was formulated.(17:12)

The milk program expanded rapidly during the first years of the Frei administration. From eight million kilograms in 1964 the quantity of milk distributed increased to 18 million kilograms by 1967.(18:67) By then the program was reaching some 900,000 children and mothers, representing about 50 percent of all potential beneficiaries. The final years of the Frei administration were marked by growing political and economic difficulties which induced a retrenchment in the area of social reform generally. Particularly preoccupied by accelerating inflation and balance of payments problems, the Frei government, among a number of other measures, sharply reduced the importation of milk in 1968 and subsequent years.(19) As a result, the amount of milk available for distribution declined by about 25 percent. The quantities distributed to infants and pregnant mothers

were held approximately to previous levels, but the supply of milk for children ages two to six dropped by more than 50 percent between 1967 and 1969.(18:67)

Changes in the leadership of the National Health Service and the mounting criticism of the milk program by sectors of the medical community were also factors in the Frei's administration's decision to reduce the program. With increasing frequency questions were raised concerning the program's real contribution to improved nutritional status, particularly in view of Chile's continuing high rates of infant mortality. It was argued that funds allocated for the program were excessive and that investment in other less costly measures would have greater nutritional impact. Critics cited the poor utilization of the milk by recipient families and alleged possible harmful consequences including low rates of breastfeeding and increased incidence of diarrhea among children intolerant to lactose.(20) There existed little hard data to support these objections to the milk program (or, on the other hand, to justify its continuation), but they were being voiced by prominent and influential scientists and doctors in Chile.

Even with the reduction, however, the Frei government distributed nearly one hundred percent more milk than its predecessor Alessandri government. The increase was made possible by the growth in national production, and by the assistance of the United States Agency for International Development (USAID), which donated some 18 million kilograms of powdered milk accounting for about 20 percent of the amount distributed from 1964 to 1970.(21:8) Once Frei left office, and Salvador Allende assumed the presidency, USAID, for political reasons, stopped its donations to the milk

program as well as most other forms of assistance. Only school feeding programs, which USAID assisted through voluntary agencies, were exempted from the general termination of aid.

Salvador Allende, the candidate of the Popular Unity coalition (bringing together the Communist, Socialist, and other smaller left-wing parties with the centrist Radical Party), was elected to the Chilean presidency by a narrow plurality in 1970. His program called for a fundamental restructuring of established social, political, and economic relationships in Chile with the stated objective of moving the country toward some form of socialism. In practice, the Allende government mixed Marxism and populism, seeking to expand the electoral base of the Popular Unity coalition while, at the same time establishing the "Chilean road to socialism."

Allende, a former Minister of Health, had long been an advocate of improved and expanded government health care. As a senator he had played an important role in the drafting and passage of much of the country's health legislation. Priority attention during his administration was given to providing rural and marginal urban population groups with greater access to health services, reducing the inequalities in health care among different social classes, and increasing resources for maternal and child health care.

Allende's campaign promise of a half-liter of milk per day for every Chilean child under 15 and for pregnant and nursing mothers was motivated, at least in part, by electoral considerations. He turned out to be correct about the political appeal of the measure; a survey taken following the municipal elections of April 1971 showed the "half-liter" to have been the most popular initiative of the Popular Unity government.(22) The

measure, however, was consistent with other health and social policies of his administration and was in addition considered a means for redistributing resources toward lower-income groups. The two candidates opposing Allende had also pledged an amplification of supplementary feeding programs to combat malnutrition.

During the Allende government the quantity of milk distributed rose to some 39 million kilograms annually (excluding the milk provided in the school feeding programs) benefiting approximately three million children and mothers -- about 70 percent of the total population below 15 and pregnant women.(23) Most of the program's expansion is explained by the inclusion for the first time of children between the ages of six and 14, but sharply increased amounts were also distributed to preschool children and mothers.(18:67)

The military junta which toppled Allende in September 1973 has established a highly conservative regime with economic and social policies fundamentally oriented toward order and stability. Social change and reform have been assigned a low priority, and there has been a general reduction of health and other social services provided by the government. Nonetheless, nutrition programs continue to receive some support. Although six to 15 year old children are no longer counted among its beneficiaries, government officials reported that 25 million kilograms of milk were distributed in 1974.(24)

Table 1EVOLUTION OF THE CHILEAN MILK PROGRAM

Year	Metric Tons of Powdered Milk Distributed	Historical Antecedents
1926		Passage of first social security law providing for insured working mothers to receive milk for infants (0 to 2 years old).
1937		Passage of so-called mother-child law extending social security coverage, including the right to receive milk quotas, to spouses and infants of insured workers. Five percent of social security revenues allocated for milk program.
Presidencies of Gonzales Videla and Juan Antonio Rios, Radical Party		
1943	400	
1948	500	
1951	600	
Presidency of Carlos Ibanez, Independent		
1954	1,300	National Health Service begins to function. Preschool children (2 to 6 years old) and pregnant and nursing mothers become eligible to receive milk, and program is extended to all beneficiaries of health service. Social security allocation increased to ten percent.
1955	1,500	
1956	2,000	
1957	1,700	
1958	2,700	
Presidency of Jorge Alessandri, Democratic Front (Coalition of Right Wing Liberal and Conservative Parties with Centrist Radical Party.)		
1959	7,600	Legislation allocating five percent of family allowances to milk program takes effect.
1960	8,400	
1961	8,100	
1962	8,600	
1963	8,000	
1964	7,300	

Table 1 (Cont'd)

Year	Metric Tons of Powdered Milk Distributed	Historical Antecedents
Presidency of Eduardo Frei, Christian Democratic Party		
1965	9,300	
1966	13,200	USAID initiates donations of powdered milk.
1967	18,400	
1968	13,600	Milk imports restricted in face of growing economic difficulties.
1969	11,800	
1970	13,700	
Presidency of Salvador Allende, Popular Party (Coalition of Socialist, Communist, and smaller Left-Wing Parties with Centrist Radical Party.)		
1971	40,500	School children (7 to 14) become eligible to receive milk for home consumption. Program no longer restricted to beneficiaries of National Health Service. Government provides direct allocation from general revenues for milk purchases.
1972	38,700	

MILK DISTRIBUTION DURING THE GOVERNMENT OF SALVADOR ALLENDE

ORGANIZATION AND ADMINISTRATION (25)

Following the inauguration of Allende in November 1970, the fulfillment of his pledge to provide each Chilean child with a half-liter of milk per day became a first-order priority of the National Health Service. A temporary agency directly responsible to the director of the Health Service was charged with the design and organization of the expanded milk program. On the recommendations of this agency, health authorities decided to use existing channels for the purchase and distribution of the milk and to turn the administration of the program back to an existing department of the Health Service, rather than creating an independent infrastructure to manage and implement the program.

The expanded program was put into operation in January 1971 on an "emergency" basis, and within six months was assigned to the permanent administration of the Health Service's Nutrition Department. The Nutrition Department was responsible for setting standards of quality, determining the quantities of milk to be purchased and allocated to each distributing agency, designing educational and informational material, and generally monitoring and evaluating the program. It was not, however, involved in the actual purchase or delivery of the milk. Milk was acquired from national producers on the basis of competitive bids by the regular purchasing office of the Health Service, while imported milk was secured through the Agricultural Marketing Service (ECA), the government agency responsible

for all food imports. ECA also had the task of moving the milk from ports to the warehouses of the Service and other distributing agencies.

The largest group of beneficiaries (children to six years old and pregnant and nursing mothers attended by the National Health Service) were to receive their milk quotas through the Health Service's extensive network of some 1300 clinics located throughout the country. Other agencies involved in the direct distribution of milk to preschool children and mothers included the Medical Service for Employees (SERMENA) and the armed forces and national police force. The National Board for School Assistance (JNAEB) was responsible for distribution to school children newly eligible to receive milk for home consumption (in addition to the meals provided by in-school feeding programs).

Although regional variations did exist, the internal distribution system of the National Health Service, involving the delivery of milk from central warehouses to health centers, functioned reasonably smoothly despite problems of inadequate storage facilities and insufficient transport vehicles. In one survey of nearly 1000 households in Santiago only 13 percent complained that milk was not available at clinics when called for.(26:38) The internal distribution systems developed by the other agencies were less adequate. For example, in 1971, SERMENA managed to fulfill less than 40 percent of its distribution quota -- compared to some 86 percent fulfillment by the National Health Service.(18:58, 61) The JNAEB, which recent evaluations (26, pg. 9) have shown to be abysmally inefficient in managing school feeding programs, also had difficulty on fulfilling its obligations under the milk program, despite an extensive network of storage and transportation

facilities. An analysis done of the milk program in 75 schools in the province of Concepcion, one of Chile's more urbanized provinces, showed that, in a three-month period in 1971, only 43 percent of the schools had supplied milk to 30 percent or more students, while 40 percent of the schools had distributed no milk at all.(28:8)

Procedures varied among the different agencies for the actual distribution of the milk to beneficiaries. In the National Health Service's clinics the acquisition of milk was associated with the regular medical checkups required of infants, preschool children, and pregnant mothers. In urban areas at least, the percentage of children normally brought in for regular visits was quite high, exceeding 30 percent in several surveys.(26:36) Neither SERMEHA or the armed forces required any medical control for receipt of the milk; milk was either delivered to the beneficiary's place of employment or recipients obtained their quota at specified distribution points on demonstrating eligibility. The milk for school age children was sent by the JNAEB to the schools where it was given to students or parents to take home.

COSTS AND FINANCING

According to the published statistics of the National Health Service the cost of the milk program was 496 million escudos in 1971 and 1,024 million escudos in 1972, amounts which, given Chile's inflation rate, were approximately equal in real terms.(23:20) These sums represented some nine percent of the country's total expenditures on public health, but less

than one percent of overall government spending.(29:31) The official figures, however, understated the real cost of the program for the following reasons: (1) the exchange rates used for importing essential food items such as milk overvalued the escudo; (2) the price of domestic milk was fixed at relatively low levels; and (3) many of the costs involved in the actual distribution of milk to beneficiaries continued to be charged to the regular budgets of the participating agencies, and were not passed on to the program.

A more accurate measure of the cost of the milk program for Chile is the expenditures incurred in foreign exchange, which became the scarce factor for the Chilean economy. Dollar expenditures on the program totaled \$23.3 million in 1971 and, although the quantity of imported milk used in the program declined, rose to \$28.4 million in 1972 because of the increase in world milk prices (from approximately \$650 per ton to more than \$1000 per ton).(23:20) These expenditures accounted for less than two percent of Chile's total import bill for the two year period, and slightly more than seven percent of all expenditures on food imports.(30:5) In the absence of the program, milk imports (although of a lesser magnitude) would have still been required for supplying consumers through commercial channels. The foreign exchange spent on the milk program was appropriated from the country's overall budget for food imports, thereby reducing the amounts available for other items but not necessarily increasing Chile's food importation bill.

By far the program's largest expenditure was for the purchase of milk, as indicated in Table 2. Had all administrative and operational costs been

charged to the program, its total costs would have probably been some 10 to 20 percent higher.

Table 2

COSTS ALLOCATED TO NATIONAL MILK PROGRAM IN 1972 (23:16)

	<u>Expenditures in U.S. \$</u> <u>(million)</u>	<u>Percentage</u>
Imported Milk Purchases	\$28.2	99.3%
Purchase of Vehicles	<u>.2</u>	<u>.7%</u>
	\$28.4	100.0%
	 <u>Expenditures in E⁰</u> <u>(million)</u>	
Domestic Milk Purchases	E ⁰ 233.9	84 %
Transportation of Domestically Produced Milk ^a	5.9 5.9	2.1%
Repackaging of Imported Milk	13.1	4.7%
Diffusion and Education Activities	2.5	.9%
Research and Evaluation	5.0	1.8%
Miscellaneous	6.4	2.3%
Construction of Storage Facilities	<u>9.2</u>	<u>3.3%</u>
	E ⁰ 276.0	100.0%

^aThe costs of transporting the imported milk to the centers of distribution were borne by the agency responsible for its importation, which included these costs in the price it charged the Health Service for the milk.

This review of the costs of milk distribution in Chile suggests the conceptual and practical difficulties in attempting accurately to determine the real costs of such a program. First, there is no fully satisfactory way to compare foreign exchange and local currency expenditures, particularly under conditions of controlled domestic prices, overvalued exchange rates, and rapid inflation. Secondly, both the actual and opportunity costs to the program's administrating agency (in this case the National Health Service), depending as they do on accounting procedures, can differ substantially from the outlays the government must make for the program. And finally, some expenditures charged to the program (e.g., a portion of the amount spent for the importation of milk) would have to be maintained even if the program were reduced or eliminated.

From its inception the milk program was financed from social security revenues. In 1958 legislation assigned the program five percent of the social security system's annual budget for family allowances. This mechanism assured the program a stable and growing budget, although, as we have seen, the program's size was dependent on annual government allocations of foreign exchange for importing milk. It also meant that, in effect, the program was largely paid for by the beneficiaries themselves.

The milk program's expansion coupled with the cutoff of food donations from the United States made it necessary for the Allende government to supplement the program's traditional sources of financing with a direct allocation from general government revenues, amounting to some 60 percent of the program's cost. The willingness of the Allende government to cover all shortfalls in the program's financing and provide significant quantities

of foreign exchange, despite the sharp rise in international milk prices and the country's critical foreign exchange situation, is suggestive of the high priority assigned to the program. The use of general revenues to finance the milk program probably increased its distributional consequences for lower-income groups.

Table 3 illustrates the potential income effects of the milk distribution program for low-income households of different sizes provided that milk was regularly obtained for all beneficiaries.

Table 3
POTENTIAL INCOME EFFECTS OF THE MILK PROGRAM IN 1971

<u>Family Income and Size</u>	<u>Value of Milk Quota Per Month</u>	<u>Percentage of Total Family Income</u>	<u>Percentage of Family Food Budget</u>
One Minimum Salary (E⁰ 850)			
	x month		
2 Children	E ⁰ 43	5.1%	10.2%
3 Children	E ⁰ 65	7.6%	15.2%
4 Children	E ⁰ 86	10.2%	20.4%
Two Minimum Salaries (E⁰ 1700)			
	x month		
2 Children	E ⁰ 43	2.5%	5.1%
3 Children	E ⁰ 65	3.8%	7.6%
4 Children	E ⁰ 86	5.1%	10.2%

The calculations are based on data from mid-1971, when the minimum monthly salary for urban workers in Chile was approximately E^0 850,(31) and the commercial price of powdered milk was fixed at E^0 10.75 per kilogram.(32:111) Although legal quotas varied with age, we are using an average quota of two kilograms of powdered milk for each child and not taking into account the milk obtained by pregnant mothers. According to a survey taken in 1968 some 30 percent of all families in Santiago had incomes below one minimum salary, while 32 percent earned between one and two minimum salaries; expenditures on food represented approximately 50 percent of total family income for families earning less than two minimum salaries.(33) These figures had probably not changed significantly by mid-1971.

POTENTIAL NUTRITIONAL BENEFITS

Table 4 indicates the quantities of milk to which different age and beneficiary groups were entitled, and the proportion of total caloric and protein requirements that the milk quotas satisfied.(23:13, 16) The largest quotas were designed for the most nutritionally vulnerable groups, while school children were expected to receive an additional glass of milk daily through school feeding programs. The milk distributed was theoretically sufficient to overcome most of the protein deficiency encountered among Chilean children. Its potential caloric contribution was considerably less, although still significant for the younger age groups.

Table 4CALORIC AND PROTEIN CONTRIBUTION OF MILK QUOTAS

Beneficiary Group	Monthly Quota in Kilograms	Equivalent Liters Per Day	Percentage of Total Requirements for Age Groups	
			Calories	Proteins
0-5 Months	3	1.	50%	> 100%
6-23 Months	2	.67	23%	> 100%
2-5 Years	1,5	.50	14%	60%
6-14 Years	1 ^a	.33	9%	36%
Pregnant Mothers	2	.67	100%	100% ^b
Nursing Mothers	3	1.	100%	>100% ^b

^aThe quota for school children was intended to supplement the milk provided through school breakfasts.

^bPercentage of estimated additional requirements resulting from pregnancy and breastfeeding.

In accord with findings elsewhere, it was long believed in Chile that the country's major nutritional problem was protein deficiency in children. Milk, with its ample content of high quality protein, consequently appeared to be the most suitable product for mass distribution. Even food technologists seeking less costly milk substitutes focusing on the development of products with protein values approximately equal to milk. In recent years, however, evidence has accumulated suggesting that caloric shortages may be a more critical problem, and that a caloric restriction has prevented adequate utilization of protein consumed.(34)

Nutrition authorities in the Allende government became aware of the importance of the caloric problem and recognized that, for certain beneficiary groups, milk could appropriately be replaced by a less costly product with a higher ratio of calories to proteins. Milk continued to be distributed, however, in part for historical and political reasons, but also because no other product both had proven acceptability among the Chilean population and was readily available for purchase in sufficient quantities from domestic and foreign suppliers.

COVERAGE

Under the Allende government all children under 15 and pregnant and nursing mothers were designated legal beneficiaries of the milk distribution program. The prospects of reaching the entire target population in Chile, with its comparatively high rates of school attendance and its extensive network of public health facilities, were far better than in most other developing nations. Yet a portion of the country's population, principally marginal urban groups and rural dwellers, had only limited access to these educational health services, and were therefore doubtful beneficiaries of the milk program. By 1960, for example, some 87 percent of all Chilean children of school age were actually enrolled in school, but enrollments were less than 65 percent in rural areas.(35:59) According to a recent study of the distribution of health services in Chile, "residents of rural areas and those with very low incomes and people without social security benefits make less use of

health services and have greater unsatisfied demand, i.e., they are frequently unable to use the services of the health system for reasons of distance, lack of time or money, or for failure to be attended."(36: 116) In quantitative terms, some 15 percent of infants in Chile in 1969 were born without professional attention, and about 20 percent of all deaths were not medically certified.(37:38, 52)

From the outset public health authorities recognized that the milk program would not, in fact, reach all its legal beneficiaries. On the basis of past experiences they established somewhat lower goals ranging from a high of 85 percent among infants to 70 percent among pre-school children and pregnant women. Even these targets, however, turned out optimistic. National Health Service statistics presented in Table 5 reported coverages ranging from 54 percent among pregnant mothers to 90 percent among school children.(23:16, 18) Since reporting and monitoring systems were not fully satisfactory, however, there probably exists a margin of error in the distributional breakdown among the different groups. On the basis of survey data discussed below, we suspect that a portion of the quota for school children was diverted to in-school feeding programs.

Table 5COVERAGE OF NATIONAL MILK PROGRAM IN 1972

Beneficiary Group	Population ^a	Coverage	
		% Programmed	% Achieved
Infants (0-23 months)	523,000	85	57
Preschool Children (2-5 years)	981,000	70	59
School Children (6-14 years)	2,027,000	80	90
Pregnant Mothers	431,000	70	54

^aTo arrive at these figures, we used the total population reported for Chile in the United Nations Yearbook for 1972 and broke it down by age groups according to the calculations of the University of Chile's Department of Public Health and Social Medicine. The population figures presented here are approximately ten percent lower than the figures of the National Health Service which were based on 1960 census data projected through 1972.

The statistics do not, of course, tell us which socioeconomic groups participated as beneficiaries in the milk program, whether participants received their milk quotas on a regular basis, nor whether participating family units obtained milk for all eligible members of the family. Several household surveys(26, 28, 38, 39, 40) performed over the past several years partially respond to this set of questions. The most

complete study was done in early 1972 by Maria Eugenia Hirmas, a sociologist working for the National Health Service, who performed interviews in a representative sample of one thousand Santiago households.*(25)

Her study showed that some 78 percent of the families eligible to participate in the milk program were actually participating -- a result consistent with the findings of an earlier more limited study in a single health zone of Santiago, which found that 75 percent of eligible beneficiaries took part in the program.(38:6) Both studies concluded that more than 75 percent of participating households secured the allotted quantities of milk for all beneficiaries in the family, and that upwards to 90 percent of these households obtained milk on a regular basis.

The Hirmas study also showed that lower-income families in Santiago took greater advantage of the program than more affluent families and that the larger number of eligible beneficiaries in a household, the greater the likelihood of the household's participating in the program. Both findings are important as nutritional status tends to decline not only with decreasing family income but also with increasing household size. The relevant data are presented in Tables 6 and 7.

Table 6

HOUSEHOLD STATUS AND PARTICIPATION

<u>Socioeconomic Status of Household</u>	<u>Percentage of Households Participating in Program</u>
Middle to Upper Income	65%
Lower Middle Income	78%
Low Income	82%

* The sample was designed by the National Institute of Statistics, regarded for its technical skill in such matters. A comparison with income distribution data in Santiago suggests, however, that lowest-income groups were somewhat underrepresented.

Table 7HOUSEHOLD BENEFICIARIES AND PARTICIPATION

<u>Number of Beneficiaries in Household</u>	<u>Percentage of Households Participating in Program</u>
1	69%
2	72%
3	80%
4 or more	88%

These results would suggest that a large proportion of all families in Santiago participated in the milk program, did so on a regular basis, and received a significant share of the milk quota to which they were legally entitled. Furthermore, higher rates of participation occurred among lower-income and larger families. Nonetheless, still further and more refined analysis of both participating and nonparticipating low-income households would be required to determine whether the program's benefits reached Santiago's poorest families who, in general, made less use of health services and among whom serious cases of malnutrition and high rates of infant mortality were concentrated.

From the Hirmas study we learn, for example, that only 64 percent of those households without social security or other medical insurance coverage, among which predominate families from the lowest income strata, took advantage of the milk program. This figure compares with an 82 percent participation among households with such coverage.(26:30) And in light of the statistics presented earlier concerning the quantities of milk distributed nationally, the high rates of participation in the milk

program among Santiago's urban residents suggest that rural communities received less than a proportional share of the program's benefits. The available data does not permit us to confirm this supposition, although health service authorities have conceded the existence of marked regional disparities in the program's coverage.

EDUCATIONAL EFFORTS

The Nutrition Department of the National Health Service had principal responsibility for disseminating information and conducting educational activities related to the milk program. The general public was informed of the program through the mass communications media, i.e., television, radio, magazines and newspapers, and posters. In Chile, where some 90 percent of all homes have radios and 50 percent television sets, the broadcast media appeared particularly suited for public dissemination activities. In addition special materials were prepared for distributing agencies, health service workers, and community organizations in the expectation that they would provide important assistance in further communicating information, organizing education programs, and, in general, increasing the capacity of beneficiaries to understand and take full advantage of the milk program. The content of educational and informational activities was designed to advise the population of their rights under the program, set forth the procedures for making use of these rights, provide guidelines for the correct preparation and utilization of the milk received, and explain the program's nutritional and health benefits and its overall objectives at the national level.(18:49-54)

During the first six months or so of 1971 television and radio broadcasts carried extensive information concerning the milk program. Following this initial phase, however, informational activities sharply diminished as the mass media, which had donated time to the milk program, became occupied with other themes. The participation of community organizations in the program's development, which had been considered critically important by the government, never really materialized on a national scale, probably due, at least in part, to the poor definition of the responsibilities that these organization should assume. Finally, the clinics and schools -- the principal centers for dispensing the milk -- offered limited guidance or instruction to recipients. Only three percent of parents interviewed in the Hirmas sample expressed any knowledge of educational activities related to the milk program provided to their children at school, while only six percent recalled receiving information at the health centers.(26:15, 16, 21)

Available data does not permit any conclusion regarding the effectiveness of the various forms of communication used to disseminate information about the milk program, nor regarding the potential benefits that might have been derived from a more intensive diffusion, expanded educational activities, or greater participation of community organizations. When specifically asked about the milk program, nearly 90 percent of the respondents in two different surveys knew of its existence. On the other hand, among eligible families not participating in the program more than half were unaware that they had the right to receive milk. Nearly 60 percent of the population interviewed either could not remember the content of any information furnished or recalled only Allende's campaign promise

(made prior to the initiation of the program) to provide each child with a half-liter of milk per day. Less than 20 percent recalled having received information concerning procedures for acquiring or using the milk. But nearly one hundred percent of the respondents were aware that regular milk consumption contributed importantly to the health and growth of their children.(26:38)

UTILIZATION

In the Hirmas study 58 percent of the households interviewed reported that the milk obtained under the national milk program was shared among all family members, while 42 percent indicated that the milk was reserved exclusively for the intended beneficiaries. Since 30 percent of the families surveyed purchased no additional milk, it was probably unrealistic to expect that consumption could be restricted to specified beneficiaries and sharing among family members avoided.(26:42) In food-short households it would appear that available foodstuffs are distributed according to family rather than government criteria.

Reliable data concerning the sale of milk or its use for other than family consumption were difficult to secure, particularly in view of the wide publicity given to possible legal penalties. Direct inquiries concerning the sale of milk brought an expected insignificant percentage of positive responses.(39:1039) Some 29 percent of the respondents in the Hirmas survey did report that they had heard of milk being sold, but that statistic has little significance since a single case widely commented upon

or unfounded rumor could be the basis of replies. Only some five percent of the persons interviewed indicated that there might be circumstances in which the sale of milk could be justified, while nearly all respondents advocated strong sanctions against persons selling milk. Less than two percent admitted that they gave a portion of their milk quota to persons outside their immediate household, while only six percent of families reported discarding leftover milk or feeding it to animals.

Findings regarding the preparation of the milk, i.e., its reconstitution from the milk powder provided by the program, indicated that a high percentage of families either excessively diluted the milk (thereby reducing its nutrient value) or prepared it in too concentrated a form (which had the effect of reducing the time period for which milk was available). These findings, which were confirmed in other surveys, are presented in Table 8.(26:44) Reasons suggested for the widespread inadequacies in

Table 8

INADEQUACIES IN MILK PREPARATION

<u>Form of Preparation</u>	<u>Percentage of Households Surveyed</u>
According to SNS Norms (10% dilution)	27%
Excessively Diluted	26%
Excessively Concentrated	47%

the preparation of the milk were the lack of information concerning correct norms and procedures as well as the wide variety in the size of cups and spoons used to reconstitute the milk -- the latter reason leading to the SNS's designing a standard size spoon for mass distribution. There did exist some positive correlation between adequacy of

preparations and socioeconomic status (reflecting also educational level), although no more than 50 percent of the households in any income group prepared the milk in accord with Health Service norms.(38:7)

In general, the beneficiaries had a high opinion of the milk distributed through the program. Of the families surveyed only 17 percent felt that milk purchased commercially was of higher quality. For many of the respondents the fact that the National Health Service supplied the milk served as sufficient grounds for believing it to be of superior quality.(26:50) These findings belie the widely held belief that donated foods are automatically considered inferior by recipient groups. Rather, it would appear that the recipients' image of the donating institution is likely to be an important factor in their evaluation of the products' quality. It should also be noted that publicity concerning the milk program emphasized that the milk was not a free good but, instead, had been paid for by the beneficiaries and was a right of all Chileans.

In many Chilean homes it is probable that the milk was stored and prepared under less than adequate sanitary conditions. Among low-income groups overcrowding (more than four persons per room), lack of running water, and inadequate or nonexistent systems of sewage and garbage disposal are prevalent and a high percentage of Chilean children suffer from gastrointestinal diseases. Nearly 40 percent of households surveyed by Hirmas failed to store the milk under suitably hygienic conditions.(26:46) But these problems of hygiene and sanitation existed for the entire food supply of the family, from which freely distributed foods could hardly be expected to be exempt.

SOME CONSEQUENCES OF THE CHILEAN MILK PROGRAM

Even during its period of greatest extension the milk program reached only approximately 70 percent of its eligible beneficiaries. Coverage was somewhat higher in larger cities and correspondingly lower in rural areas. Lower-income families, particularly those with larger numbers of children, were more likely than middle- or upper-income families to participate regularly in the milk program, but indications are that participation rates among the poorest sectors of the population (in both urban and rural areas) dropped below the national average -- probably because of their more limited access to health services generally.

The channels used to distribute milk to recipients, especially the clinics of the National Health Service, functioned relatively efficiently. The potential nutritional benefits of the program, however, were diminished somewhat by the home utilization of the milk, especially among low-income households in which the milk was more likely to be consumed by all family members and in which conditions and procedures for preparation and storage were often inadequate. The selling, discarding, utilizing for animal feed, or other improper uses of the milk did not appear to have been common practices.

The principal objectives of the milk distribution program in Chile included the reduction of infant mortality rates and the general improvement of the nutritional status of vulnerable groups. Infant mortality has declined in the past 35 years from above 200 per thousand live births in 1937(41:26) to 65 per thousand in 1973.(42) But the

contribution of the milk program to that decline cannot be identified or separated from the effects of improved health and sanitation conditions, increased per capita income, better educational levels, etc.

Likewise, during the three years of the Allende government the infant mortality rate dropped by nearly 18 percent (from 79 per thousand in 1970 to 65 per thousand live births in 1973); mortality among children from one to 11 months declined by 20 percent and deaths due to diarrhea and respiratory infections declined by 15 and 30 percent respectively (43:26) -- all indications of an improved nutritional situation. Direct measurements of nutritional status also demonstrated improvements. The National Health Service reported that, among samples of more than 300,000 children below six attended by its clinics throughout the country, the incidence of malnutrition declined by some 17 percent between December 1970 and October 1973,(43) while researchers examining clinical records in Santiago's Northern Health Area observed a 20 percent reduction in malnutrition during approximately the same period.(44:13) Again, however, the impact of increased milk consumption cannot be separated from government measures to reduce income disparities among different social groups, control food prices, and provide increased health care services to low-income families.

A study in Valparaiso found that between 1970 and 1971 malnutrition had decreased by 23 percent among infants and 15 percent among preschool children, and concluded that the expansion of the milk program was a major factor in that decline. The data presented, however, did not support the study's conclusion. The researchers sought to isolate the factor of

increased milk consumption by comparing the amount of milk distributed per capita by each clinic with the degree of nutrition improvement encountered in the population served by that clinic. No significant correlation was found.(40)

On the other hand, several commentators have suggested that the milk program may have led to a worsening of Chile's nutritional situation by contributing to a decline of breastfeeding.(1:90, 91) The available data do not support that conclusion either. On the contrary, they indicate that early weaning was a common practice, at least in the country's urban areas, long before the milk program had achieved wide coverage. A survey of 5000 mothers in Santiago in 1942, when milk was distributed to less than ten percent of all infants, found that fewer than 40 percent of the mothers interviewed were breastfeeding after three months.(45:759) In 1970, according to a more recent study, the figure stood at approximately 30 percent.(46:9)

That milk, particularly in powdered form, has become a staple in the diet of most Chilean households can, at least partially, be attributed to the long history of milk distribution in Chile. The program directly provided milk to families who, for economic reasons, would have been unlikely to purchase it in significant quantities, thereby accustoming these families to the regular use of powdered milk. Indirectly, the milk program helped stimulate the development of a national milk production industry, thereby augmenting the supply available to consumers.

The Chilean dairy industry has grown steadily in recent years. In 1957 a total of some 253 million liters of milk (about 35 liters per capita)

were sent for processing to industrial plants.(47:340) By 1966 the amount had increased to 415 million liters (50 liters per capita) and by 1971 to 571 million liters (62 liters per capita).(19:2) The milk program probably contributed to this growth by providing a stable and assured market for processed milk and by influencing a change in consumption patterns from whole to powdered milk, thereby facilitating transport and storage. Moreover, the origins of Chile's national milk processing industry can be traced to the efforts of health authorities associated with the distribution program.(15, 41:274)

We would additionally suggest that the very existence of the milk program has had some educational impact. The extent of the influence cannot be accurately measured, but it has probably contributed to the public's general awareness of the importance of milk in the diets of young children, and of the relation between adequate nutrition and health. The program -- and the public discussion and controversy it has generated -- has also likely been partially responsible to the concern for nutrition problems among such groups as medical professionals, social workers, and even political decisionmakers.

Finally, we believe that sustained high-level government attention to the problem of malnutrition and the country's experience with the milk program have served as an important stimulant to development of research in nutrition and food technology. Chile's scientific and technical capacity in these areas is matched in few other developing countries, and several Chilean research laboratories have acquired international reputations for their work. It is significant that a good share of these research efforts has been focused on the development of milk substitutes.

INTERPRETING THE CHILEAN EXPERIENCE

This study has treated the evolution of one nutritional intervention in one country over a period of some 50 years. It does not compare the milk distribution program in Chile with similar efforts in other countries, nor does it attempt to relate or compare supplemental feeding with other nutrition measures. One cannot generalize with confidence from this or any other single case, but we believe it useful to attempt to place our observations in a broader perspective. The generalizations which follow move us somewhat beyond the data at our disposal and should be taken as suggestive rather than conclusive.

Four interrelated factors conditioned the evolution of the milk program in Chile: the outreach of the country's governmental institutions, particularly those of the health sector; the country's changing economic and balance-of-payments situations; the leadership provided by health professions; and the evolving nature of Chilean politics. We would propose that these four factors are likely to assume a critical role in the development elsewhere of supplemental feeding programs and of other specific measures designed to raise a country's nutritional status.

INSTITUTIONAL DEVELOPMENT

The probability of a food supplement program, or indeed any so-called nutrition intervention, making a significant contribution to improved nutritional levels is directly related to the proportion of the nutritionally vulnerable it attends. The critical variable is the extent

to which government institutions penetrate to all regions of a country and to all levels of society. A high degree of institutional penetration not only provides a means for distributing food supplements but generally also implies the existence of services (in such fields as health, education, sanitation, agricultural extension, etc.) reinforcing the potential nutritional impact of food distribution.

In most developing countries governmental penetration is slight or nonexistent among the poor as indicated by statistics concerning access to health and educational services, enrollment in social security systems and regular labor force participation. Those most likely to be either fully or partially excluded from the benefits of public services are recent migrants to cities, persons with irregular employment, families living in squatter settlements or other forms of unstable housing, agricultural workers, and small farmers -- in short, those typically most nutritionally at risk. The argument has been made that, given the extreme difficulties of reaching these marginal groups, they should be neglected and that nutrition measures purposefully be targeted at families somewhat higher on the socioeconomic scale.(48) Whether intentionally or not, nutrition interventions in many countries conform to that model, often tending to harden further existing patterns of stratification and poverty and thereby perpetuating the conditions responsible for the persistence of malnutrition.

The milk distribution program in Chile developed, not as an autonomous nutritional measure, but as part of the country's health care system.

The potential coverage of the program was limited by the outreach of public health services generally, and its growth was fundamentally dependent on extension of these services to additional sectors of the population. There was no institutional mechanism by which milk could have been distributed to those groups not served by government health services, nor, to our knowledge, were there any efforts made to develop such mechanisms.

The coverage achieved by the milk program during the Allende government was made possible by the prior existence of a countrywide network of some 1300 health clinics, (37:36) and by a school system enrolling more than 85 percent of children aged seven to 15. (35:59) Those families outside the reach of health and educational services were unable to participate regularly in the milk program. Not surprisingly coverage appeared lower in rural areas where health services were less accessible and school attendance rates were considerably below the national average.

Commercial channels and community organizations are often presented as alternatives to government agencies for the distribution of supplemental foods. Commercial channels, however, are not likely to be well developed in countries of low institutional capacity, and they cannot provide any of the desired complementary services. Moreover, their participation in a public feeding program requires a degree of government supervision and coordination which would probably exceed the capacity of a governmental apparatus with limited outreach. Likewise, the existence of strong community organizations in most cases entails a

degree of social mobilization rarely found in countries with low levels of state activity. And where social mobilization exists without the corresponding penetration of public institutions, it is likely to be viewed as a threat to the established order and authority; under such circumstances community organizations are unlikely to be entrusted with the implementation of programs (like food distribution programs) which have the potential for contributing to further mobilization outside government control.

The Allende government actively promoted the development of community and union organizations, and policy directives called for their ample participation in the milk program and in other health sector activities. Even under these favorable circumstances, however, non-governmental organizations contributed significantly to the program's operation only in a few areas where local health personnel made special and continuing efforts to encourage participation and to define, in concrete terms, responsibilities for such organizations. Somewhat greater success was achieved in the organization of local committees (called Boards for Supply and Control of Prices -- JAP's) initially to supervise commercial distribution of foodstuffs and subsequently to distribute food directly to consumers as food shortages, hoarding, and black marketeering assumed increasingly serious proportions. The accomplishments of the JAP's varied from locality to locality, but they appeared to be most effective where political mobilization was high.(49)

The operation of a supplemental feeding program is a complex enterprise involving the importation and domestic purchasing of food;

its packaging, transportation, storage, and eventual delivery to recipients; the preparation and dissemination of information to a wide variety of groups and individuals; and overall coordination, monitoring, and evaluation. The potential nutritional impact of supplemental feeding will depend importantly on the efficiency with which this multitude of tasks is accomplished. As the Chilean experience demonstrates, a well-functioning system can also contribute to the formation of a positive image of the food provided.

The coverage of the Chilean milk program, the regularity with which beneficiaries obtained their quotas, and the fact that the milk was received in good condition, all suggest that, during the Allende period, the program functioned reasonably well -- an accomplishment probably facilitated by Chile's long experience in the distribution of milk and the government's use of existing institutions to implement the program. Nonetheless, difficulties did arise at the outset of the expanded program and, of the agencies participating in the program, only the National Health Service, which had managed the program during previous governments, attained a satisfactory level of efficiency.

Even where wide coverage and reasonable standards of efficiency are achieved, we have observed that the nutritional objectives of a supplemental feeding program may be thwarted by the inadequate household use of the distributed food. Problems of home utilization in Chile were intimately related to the extreme poverty of many recipient families. The milk was not reserved for its intended beneficiaries in low-income households where overall food supplies were probably insufficient.

In these households utensils required for adequate preparation were also lacking, suitable storage facilities unavailable, and sanitary conditions wanting.

The magnitude of the sharing problem would suggest that feeding programs might be more effective if they were designed for the entire family unit rather than for certain specified members. Largely for political and administrative reasons, all Chilean families, regardless of their nutritional status or income level, were potentially eligible to participate in the milk program. Nutritional objectives might have been better served had participation been restricted to those households most nutritionally at risk and foodstuffs provided for consumption by all household members.

Nutrition education, widely advocated as a means for improving the utilization of available food, has not been notably successful in Chile despite the extensive coverage of the country's mass communications media. It could reasonably be argued that the educational activities associated with the milk program were too limited in scope to have achieved any meaningful impact. But the information that was provided -- largely through mass media campaigns which presumably reached most Chilean households -- was poorly assimilated by the general public. The evidence does not allow us to predict whether more intensive efforts would have brought different results.

ECONOMIC CONSIDERATIONS

As the Chilean experience indicates, the establishment of a supplementary feeding program that reaches an important share of a country's vulnerable population and, at the same time, provides a nutritionally meaningful quantity of food to each beneficiary represents a substantial investment. At a thousand dollars per ton on the world market, for example, the annual opportunity cost of distributing the equivalent of one-half liter of milk daily would be about \$18 per beneficiary -- without considering losses and wastage or the expenditures required for managing the distribution system. For some countries this sum would represent 20 percent or more of the national income per capita. In these countries, where the nutritionally vulnerable probably constitute a high percentage of the overall population, the costs of an extensive food distribution program could absorb a large fraction of government spending, particularly when the government's capacity to tax and generally raise revenues is restricted as is often the case.

The milk distribution program in Chile required significant expenditures in both local currency and foreign exchange. Except during the period of Allende, when a supplementary allocation from general government revenues was provided, the local currency expenditures were financed from a fixed percentage of social security revenues (a means of financing which provided insufficient funds for the program to reach all of its legal beneficiaries and which implied no significant redistribution of resources among social groups). These domestic

expenditures were never the object of particular controversy, probably because of their limited distributional consequences, and grew steadily regardless of the government in power. Increases in the amount of the social security contribution, leading to substantial expansions in the program, were approved in 1954 and 1958 without major opposition.

In view of Chile's perennial balance-of-payments difficulties the foreign exchange costs of the program came under greater scrutiny. Indeed, since 1958 the program's size depended in large measure on the government's allocation of hard currency for importing milk. Fiscal caution combined with the resistance of domestic producers led the Alessandri government to restrict milk imports and hold the quantity of milk distributed constant over a six-year term. Frei lifted those restrictions in early years of his administration but reimposed them in 1968 when confronted with an accelerating inflation and a worsening balance-of-payments situation -- resulting in an initial expansion and then a substantial contraction of the program. The Allende government, facing a more critical foreign exchange shortage, continued to import large quantities of milk but gave serious attention to the development of less costly milk substitutes, to the point of approving the financing of industrial plants for their production.

Like Chile, most developing countries face precarious balance-of-payment situations, and many are barely able to manage the importation of sufficient food to supply commercial channels. Avoidance of the foreign exchange limitation would require that feeding programs be based on domestically produced commodities. But, in a free market economy,

there is no assurance that domestically cultivated food items will be made available for government purchase and distribution. Milk producers in Chile typically sold less than ten percent of their output to the milk program, preferring to deal with commercial distributors from whom they could generally command higher prices.(32:62 and Table 3) In 1956 the producers refused to sell any milk to the Ministry of Education for its school feeding programs.(50) During the Allende government an unusually large portion of the milk produced in Chile (the price of which had been fixed at relatively low levels even for commercial sales) was converted to cheese and other dairy products.(19:1) Under the implied threat of further government control, however, producers sold some 50 percent more milk to the Health Service in 1972 than they had in 1971.(23:20)

THE POLITICAL SETTING

Milk distribution per se, even during the Allende years, was never a central issue of Chilean politics. Unlike such issues as agrarian reform, expropriation of industry, or wage policies, the milk program was not the object of national political conflict or controversy. The program represented -- following Hirschman's classification(51:252) -- a nonantagonistic approach to the problem of malnutrition in that it implied no significant shifts in wealth or power from one social group to another. With the possible exception of milk producers, no group felt particularly threatened by milk distribution while large numbers

apparently perceived themselves better off because of it. The program did, however, achieve some political importance, particularly during the Allende administration when it was displayed as a symbol of government concern for the health and well-being of children from disadvantaged backgrounds.

The establishment and growth of the milk distribution program along with other social welfare measures in Chile reflected the evolution of Chilean society and politics in this century. Beginning in the 1920's Chile's traditional elites were increasingly forced to share power with emerging middle- and working-class groups. Political participation, of which voting statistics are one measure, expanded gradually but steadily, and center and left-wing political parties achieved increasing electoral and parliamentary strength. The growing influence of middle- and lower-income sectors created pressures for the extension of the state bureaucracy and the expansion of all types of social services.

The development of the milk program paralleled the growth and extension of government health care services but also reflected the shifting priorities and objectives of these services. From the 1930's health legislation gave increasing emphasis to preventive medicine and to maternal and child health care. These changes were long advocated by progressive sectors of the medical community who also sought reforms in the institutions responsible for the provision of health care. Chile's evolving political and social order provided the setting in which such reforms and changes could take place; their content and direction, and perhaps the pace at which they were implemented, however, were defined

largely by health authorities and other medical professionals, including such men as Salvador Allende and Eduardo Cruz Coke. The milk program was initially conceived and justified by health authorities as a response to the widespread and serious problem of malnutrition. Surveys and other research conducted largely by medical doctors demonstrated the prevalence and persistence of malnutrition and its consequences for health, and legitimized its claim on public resources. While there was continuing controversy within the medical community concerning the appropriate size of that claim vis-a-vis alternative health expenditures, nutrition advocates -- a forceful minority in the community -- regularly occupied key positions in the health bureaucracy and were also able to press effectively their case through access to the mass media and more directly through political connections. Their leadership, reinforced by the concurrence of foreign experts, was a decisive factor in the sustained attention given to nutrition problems in public policy and in the development of the milk program and other nutritional measures.

That attention, however, did not readily translate into an improvement in the situation of the country's most nutritionally vulnerable groups. The primary beneficiaries of expanded health services and nutrition programs, like other social welfare measures, were public and other white-collar employees and organized sectors of the working class, who comprised the principal constituencies of Chile's political parties. The costs of these measures, according to several analysts, were largely borne by the urban and rural poor who lacked political representation. (52:133, 53:12) Along with the continued extension of

voting rights, the benefits of social programs, including the milk program, gradually reached down to include groups lower on the socio-economic scale. But established groups were able to protect their economic interests and prevent any lessening of social and economic inequalities.(52:119) Some redistribution of wealth toward lower-income sectors occurred during the Allende period and perhaps during the first three years of the Frei administration, although portions of the marginal rural and urban population were probably excluded from that redistribution, as they were from the benefits of the milk program.

The development of an extensive program of milk distribution in Chile was made possible by the country's social and political evolution. That evolution, however, also resulted in a highly stratified society -- with sharp disparities of income and wealth among social classes, with a large segment of the population living at or near subsistence levels, and with high incidences of malnutrition among low-income groups. The milk program may have contributed to some improvement of nutritional standards in Chile and certainly led to heightened attention to nutrition in the practice of health care. Malnutrition, however, has remained a feature of Chile's social order reflecting the persistence of certain patterns of distribution, consumption, and production -- patterns which have been reinforced, with few exceptions, by the country's strategies of economic development. The eradication of malnutrition in Chile, as elsewhere, will require sharp changes in those patterns, and is unlikely to be accomplished by autonomous measures grafted onto them.

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