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THE CHANGING UNITED STATES FOOD MARKET

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Excess capacity in United States food production, although highly beneficial to consumers, exerts a persistently downward pressure on farm commodity prices. This paper examines basic trends in food demand in the U.S. with implication for changes during the last 15 years of the 20th century.

The driving force of food production in the United States has been the market, both perceived and realized, for food. Generally, the balance between food consumption and food production in any nation has primarily been a function of the race between population and advances in science/technology of food production to satisfy their food needs. The United States along with Europe, Canada, Oceania and the Pacific Rim nations have advanced the science/technology of food production to keep pace with or exceed the needs of an increasing population. Although the Pacific Rim, including Japan, Taiwan, Hong Kong and Singapore, is deficit in food commodities, they possess ample export exchange to satisfy food needs through the world market. However in much of the world, particularly Africa, Asia and parts of Latin American, increased population has far outdistanced the advances in science/technology for increasing food production in these places. The science/technology advances in the food production sector and other sectors of the economy have allowed the noncommunist industrialized nations to win the race between science/technology and population. In the United States as well as some other nations, the science/technology of food production in most commodities is clearly ahead of food needs and, hence, the continuing existence of a surplus.

Recent attention has been drawn to those nations where food deficits are the rule rather than the exception and where they do not have or are unwilling to allocate export exchange to alleviate the imbalance between food needs and food production. While the deficit dilemma of these nations are of extreme importance, this paper focuses on the United States food market, particularly assessing the forces contributing to market changes and the potential of the domestic market to diminish pressure on surplus agricultural productive capacity during the remainder of the 20th century. While surplus agricultural productive capacity has contributed to market instability at the farm, fabricating and distribution levels, it has been highly beneficial to consumers by

assuring an ample food supply at relatively low prices. In addition, this excess capacity in agriculture provides the basis for entry into the international market which generates export earnings necessary to partially offset imports -- particularly petroleum and manufactured products. However, excess capacity, not absorbed by the export market, exerts a downward pressure on domestic farm commodity prices and farm income. Moreover, government intervention in the market, designed to balance food production with food needs and, thus, alleviate the downward pressure on farm prices and income, has frequently resulted in excessive accumulation of commodities and/or excessive government costs.

Three quantifiable forces contribute to changes (expansion/contraction) of the domestic food market. These are: 1) population and its characteristics (e.g. age distribution), 2) consumer real income or purchasing power, and 3) substitution among foods and food groups. Also, there are nonquantifiable or less quantifiable forces at work in the market. These include: 1) food habits which may be related to race and ethnic origin, 2) physical activity, whether work or pleasure (physical fitness), which is related to energy requirements, 3) the social infrastructure and related food patterns, and 4) dietary or health issues. These and other factors operate largely through the substitution processes.

Population Effects on the Food Market

In recent years, the total quantity of food used domestically has changed in direct proportion to the population. Hence, the domestic market for total food has been primarily affected by the population of the United States which has increased persistently but at varying rates. As a result of the "baby boom" following World War II during the latter 1940s and 1950s, population growth rates near 2% annually were experienced. Subsequently, population growth rates decreased through the 1960s and 1970s and fell to near 1% annually in the 1970s. When the "baby boom" generation became of child-bearing age in the late 1970s and 1980s, population growth rates began to recover. Population growth rates somewhat below 1% annually appear to be the most likely scenario during the remainder of the 20th century.

Also, the changing age and racial/ethnic compositions of the population are of

substantial importance to the domestic food market. The distribution of the population of the United States is becoming increasingly older and female. The age distribution of the population between 1970 and 1980 reflects an increase in the proportion of persons in the 18-44 year old and the over 65 year old age groups (Table 1). Declining birth rates were accompanied by an upward shift in the age composition of the population. A continued upward shift in the age composition is projected to the years 1990 and 2000. Changes in food demand affected by changes in population distribution can be inferred from Table 1. For example, consumption of milk usually decreases as age increases. The decline in relative numbers of people in the less than 18 year old age group portends a further decrease in milk consumption. In the beverage food group, the decline in milk consumption was offset by increases in soft drinks, fruit drinks and other beverages.

Food consumption, specifically the mix of foods, is conditioned by habit related to racial/ethnic origin. This is of increasing importance as greater proportions of the United States population become black and hispanic. The nonwhite population is projected to increase between 1980 and 2000 from 14.5 percent to 16.9 percent of total population (U.S. Bureau of the Census(b)). This has resulted in Mexican-type foods increasing in relative importance as are selected foods associated with the black population. Similar changes have occurred for other commodities as changes in the composition of the population have evolved.

For over 20 years, the total quantity of food per person has remained within the range of 1,380 to 1,400 pounds. With this apparent physical restriction on human consumption capacity, low and declining rates of population growth portend a slow growth in the domestic food market. However, the changing age-sex composition of the population does change the domestic food market through the kinds of foods demanded. The changing kinds and quantity of foods demanded will require a food production - fabrication - distribution system that is responsive. The degree to which the system is responsive depends on how accurately the changing market and its mix of commodities are monitored and how effectively this information is used to project characteristics of the food market by location over time.

Income Effects on the Food Market

In addition to food needs based on population, age composition of the population and physical activity, a viable food market is dependent upon the level and distribution of income or purchasing power. However, the impact of the variability in the level and distribution of income on the food market has been somewhat suppressed by the undergirding effect of the food stamp program, school lunch programs and a range of income transfer programs such as welfare payments, unemployment compensation and social

security. In essence, most of the population of the United States has access to ample food in terms of energy and bulk -- either through purchasing power or government assistance.

Income or purchasing power and the extent of government assistance does, however, influence the kinds of foods consumed. Specifically, as income increases from low to high, its constraint on the exercise of food preference diminishes, and the consumer is able to increase the services, convenience and other amenities associated with food consumption.

Traditionally, rising affluence in the United States, e.g. between the 1961-63 and 1971-73 periods, was accompanied by an increasing proportion of animal origin products in the food mix (Table 2). Plant foods, particularly the starchy foods such as grains and potatoes, were replaced with animal origin foods, resulting in an increased derived demand for feed grains, oilseeds and forage. This transition, along with substantial population growth, provided the primary source of expansion of the food market in the United States. Recently, however, this trend to an increasing proportion of animal origin foods in the diet has apparently run its course and may have reversed. This reversal is indicated by a decline in the proportions of meats, especially beef, and dairy products in the diet while the proportions of fresh fruits and fresh vegetables have increased during the past decade.

Substitution processes are also at work within specific food groups. Traditionally, rising affluence was accompanied by an increasing proportion of beef in the mix of meats. This translated into an increasing derived demand for forages, grain, and oilseeds. However, this trend has reversed with poultry meat increasing relative to red meats. The net result is a decreasing derived demand for feed grains and forage.

In addition to the average level of per capita income, the distribution of income is important with respect to its impact on purchasing power (and, hence, the kinds of foods demanded) by specific segments of the population (Michel, Levy, Moon and Sawhill). Prior to the 1980s, the trend was toward the relative enhancement of the lower income groups with a shift in income to improve their purchasing power -- that is, a narrowing of the gap between low and high of income groups. However, this trend reversed in the 1980s with a shift in the income distribution toward the high income groups. Thus as the poor become relatively poorer, the declining purchasing power at the lower levels of income will increasingly inhibit the exercise of food preference in the 1980s. The result is that lower price foods are being substituted for higher price foods, -- e.g., beans for poultry, poultry for beef, margarine for butter, etc. -- as the income constraint tightens.

The reversal of income distribution toward the high end of the spectrum as the 1980s unfold has initiated the substitution

processes among foods that is being accompanied by a reduction in the demand for the primary farm commodities, particularly forage and feed grains. This trend in consort with the declining export market, apparently attributed to the same forces, have contributed to the farm commodities surplus dilemma of the 1980s.

Diet and Health Effects

As the physical work requirements in the United States has diminished over time -- attributed to mechanization and automation -- the population has become overweight. This subsequently leads to an effort to amplify the effects of obesity with dietary constraints on energy consumption. Animal fats, starches and sugar are the types of food intake most prone to reduction under energy constraints. Hence, the reduction in energy consumption has been manifested in recent years in an increased consumption of leafy fresh vegetables, fruit, and poultry meat with a reduced consumption of cereals, red meat, and starchy vegetables.

Another force contributing to substitution among foods is that of health -- particularly diseases of the blood circulatory system and cancer. The major emphasis has been on reduction of animal fats, sodium, and an array of food preservatives and increasing the consumption of fiber, primarily fruits and leafy vegetables. Again, the major adversely impacted foods are dairy products (especially the fat component), beef and pork. More recently, the evidence has shifted to dietary deficiencies -- especially calcium -- as a major cause of health problems, particularly among the elderly. In that dairy products are the most important food source of calcium, this may halt or reverse the downward trend in the consumption of dairy products in the foods mix.

Social Patterns Effects

Life styles and the role of dining for social interaction also impact the mix of foods and preparation of foods. The trend to suburbia with rising income in the 1950s and 1960s was accompanied by outdoor cooking, primarily grilling meat over charcoal. Beef, especially high quality grain-fed beef, was the primary beneficiary of the suburbia boom of the 1950s and 1960s.

The abrupt increase in the cost of energy in the mid-1970s halted the trend to suburbia and the accompanying lifestyle. The lifestyle associated with congested multi-unit housing and mobile home parks are not as conducive to outdoor grilling. Also, the necessity of two or more wage earners per household to meet rising costs of living -- again energy related -- has reduced the time available for at home food preparation. The time constraint has contributed to the rapid increase specifically in fast food establishments and generally to the food service industry. Chicken, hamburger beef and potatoes are the main beneficiaries of the fast food business. More recently, however, the salad bar is becoming a prominent

part of fast food. These changes embody increased demand for services as well as increased quantity of selected foods.

Summary and Implications

The continually changing food market in the United States has primarily resulted in a decline in the demand for food grains, feed grains and dairy products during the 1972-83 period. Hence, the resolution of the farm surplus dilemma is likely to occur only through the export market and/or through restricting production of the affected commodities. The prospects for expansion of the domestic market for these products -- direct and derived demand -- is at best minimal.

Population growth is low with a shift in the age composition toward the older age groups. Hence, an aging society with reduced physical activity portends reduced demand for high energy foods, red meats and dairy products.

The modest population growth has been largely offset by a decline in the per capita demand for the surplus commodities -- both direct and derived demand. A reduced derived demand for forage shifts land into grain and oilseeds further contributing to the surplus dilemma in these commodities. The agricultural areas, particularly those that are marginal, are impacted by this type shift.

Dietary and health concerns have further contributed to reduced per capita derived demand for food grains, feed grains and forage. An offsetting increase in per capita demand for poultry meat and salad-type vegetables require a substantially smaller land base, and other resources. Thus, the reallocation of the agricultural productive capacity must be responsive to change, both current and projected, in the food market.

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Table 1. Percent distribution of United States total population, by age and year.

Age years	Year			
	1970	1980	1990	2000
	percent			
Under 18	34.0	28.0	25.8	25.1
18 to 44	35.7	41.2	42.9	39.1
45 to 65	20.5	19.5	18.6	22.7
65 & over	9.8	11.3	12.7	13.1

Source: U.S. Bureau of the Census (a).

Table 2. Annual U.S. per capita consumption and percent distribution of food groups by 3-year periods.

Food group	1961-63		1971-73		1981-83	
	Per capita consump- tion	Propor- tion of total	Per capita consump- tion	Propor- tion of total	Per capita consump- tion	Propor- tion of total
	lbs	%	lbs	%	lbs	%
Meat	147.4	10.7	162.1	11.8	152.9	10.9
Poultry	37.6	2.7	49.8	3.6	64.1	4.6
Fish	13.8	1.0	14.9	1.1	14.6	1.0
Eggs	41.2	3.0	38.2	2.8	33.4	2.4
Dairy products incl butter	357.9	26.0	332.4	24.1	303.8	21.7
Fats & oils, excl. butter	41.5	3.0	51.1	3.7	56.9	4.1
Fruits, fresh	79.0	5.8	75.7	5.5	86.7	6.2
Fruits, processed	49.1	3.6	55.7	4.1	51.3	3.7
Melons	28.1	2.0	24.6	1.8	25.8	1.8
Vegetables, fresh	137.1	10.0	127.2	9.2	149.1	10.7
Vegetables, processed	51.9	3.8	62.5	4.5	57.3	4.1
Potatoes & sweet potatoes	101.4	7.4	84.1	6.1	87.5	6.3
Beans, peas, nuts, & soya products	17.6	1.3	18.4	1.3	19.4	1.4
Flour & cereal prod.	145.8	10.6	142.5	10.3	150.0	10.7
Sugar & other sweeteners	110.5	8.0	124.8	9.1	134.9	9.6
Coffee, tea & cocoa	15.4	1.1	14.2	1.0	11.4	0.8
TOTAL ^a	1,375.3	100.0	1,378.2	100.0	1,399.1	100.0

a. Sum of columns may not sum due to rounding.

Source: U.S. Department of Agriculture.